

Railway Age Gazette

Including the Railroad Gazette and The Railway Age

PUBLISHED EVERY FRIDAY, AND DAILY EIGHT TIMES IN JUNE, BY
THE RAILROAD GAZETTE (INC.), 83 FULTON ST., NEW YORK.

CHICAGO: Plymouth Bldg. CLEVELAND: Williamson Bldg.
LONDON: Queen Anne's Chambers, Westminster.

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Subscriptions, including regular weekly issues and special daily editions published from time to time in New York, or in places other than New York, payable in advance and postage free:

United States and Mexico.....	\$5.00 a year.
Canada	\$6.00 a year.
Foreign Edition (London).....	£1 12s. (\$8.00) a year.
Single Copies	15 cents each.

Shop Edition and the eight M. M. and M. C. B. Convention Daily issues, United States and Mexico, \$1.50; Canada, \$2.00; Foreign, \$3.00.

Entered at the Post Office at New York, N. Y., as mail matter of the second class.

VOLUME 49. FRIDAY, SEPTEMBER 30, 1910. NUMBER 14.

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OUR readers may have noticed now and then recently an article or two on the subject of politeness; if so, we are glad. But while musing on the question of how far the influence of the "printed page" has, in this instance, produced results, we are confronted by a newspaper item to the effect that one of the best roads in the country has found it necessary to issue a general order calling its conductors to account for neglect of one of the simplest elements in their duty as promoters of the comfort of passengers. This order says that both the train conductors and the Pullman conductors have too generally indulged in the practice of retiring to some secluded spot in the train and there

making up their reports, oblivious to all things outside, instead of taking care, as they should, that either their subordinates or themselves go through all the passenger cars of the train frequently for the purpose of seeing that everything is satisfactory to passengers. All of the conductors to whom this order is addressed are running on lines east of two well known cities, Erie, Pennsylvania and Pittsburgh, Pennsylvania, and west of the Atlantic Ocean. If this defect were to be cured by force instead of by moral suasion or expostulation we should be inclined to suggest a radical reduction of prices for seats in "drawing rooms," so that such rooms would be constantly occupied by passengers. Then there would not be so many secluded spots. The art of politeness in a trainman includes the keeping of an open ear, at all proper times, to all who may properly speak to him.

THE railways will not fear unjust regulation by individual states in future if the findings made last week in the Minnesota rate case by Master in Chancery Otis are sustained by the Circuit Court which appointed him and by the Federal Supreme Court. For, of course, if the Circuit Court does uphold his findings, the case will go to the Supreme Court. Part of the rates in question were fixed by the Minnesota Legislature; and others by the State Railway Commission; and most of them were lower than the corresponding interstate passenger and freight rates made by the carriers. The effect was to force the roads correspondingly to reduce their interstate rates. The master held that this was an unconstitutional interference with interstate commerce. If this is correct, most of the rate laws passed and orders issued by legislatures and commissions in the South and West during the last three years are unconstitutional, and the states' power to regulate railways is very limited. The second ground on which the master found the rates unconstitutional was that they were confiscatory. He held that when a railway is economically and honestly operated the stockholders are entitled to a return of at least 7 per cent a year upon the value of the property; and that the Great Northern, the Northern Pacific and the Minneapolis & St. Louis, the roads involved, are so operated. He found that the valuations of the Northern Pacific and the Great Northern made by the state commission were unfair, and that the value of the Northern Pacific is about 30 per cent. more than its capitalization, and the value of the Great Northern about 75 per cent. more than its capitalization. If the holdings of the master as to this phase of the matter are correct a great majority of the railways of the country will be able to satisfy the courts that their values exceed their capitalizations, and that they are now not only not earning excessive returns, but are not earning fair returns. It would be easy to attach too much importance to Master in Chancery Otis' report. It is quite possible the decisions of the courts will be quite different. But as a straw indicating how the wind blows it may be significant.

THESE are buzzing as well as parlous times, big with the long and more or less noisy discussion of rates, "regulation" and revaluation. But in the general din one of the most familiar elements of the general question has been well-nigh forgotten. A corporation has been often defined as a legalized and chartered person, and, in the contemplation of such an incorporated person, the real person—the stockholder—has faded into the background overmuch. The actual interests in such contentions as the present are threefold—stockholder, railway corporation and public—while the open contention is between the last two. The public criticism which whacks at the corporation rarely or never seems now to look at the fundamental stockholder behind. Yet he is there, the main party at interest, and in his position as an investor no different from the merchant who invests in goods and ships them. Let us take a simple illustration derived from the hue and cry on "revaluation," "original investment," "fair return" on property and the rest, and apply it, not to a speculative railway property, but to an old dividend-paying one. "Fair return" in such a case is reckoned on the par. Yet the stock may not have sold at par for thirty or forty years. It

has changed hands, in blocks larger or smaller, during that period thousands of times. It has been distributed above par in the division of estates, given to trustees, counted above par in numberless exchanges for other than railway property; nor does the "widow and orphan" appeal become a mere sentiment when applied to a railway property like the New Haven, a majority of whose shareholders are women. Are such a class to be held responsible for, say, the 80 per cent. stock dividend of the New York Central in the days of Commodore Vanderbilt, which, though remote and not questioned legally, must have its place in any ratio of New York Central capital to actual value of plant? The public, as represented by its official agents, must, of course, deal with the corporation and its officers in examining rates, capitalization and kindred matters. But may not incidental reference, at least, be made to the fact that the corporation is at bottom an intermediary and that the person, not behind but in front of the gun, is the man, woman or child, the trustee or the savings bank, happening under a different state of affairs from the present to have acquired a railway stock certificate? In the whirl and onset of the attack on the railways, may not some attention be called to the stockholder's existence, to his original purchase of his fraction of a railway property under what seemed stable conditions of law, if not its direct guarantees, and to his elemental innocence?

THE BLUFFTON COLLISION.

THE terrible butting collision of electric cars near Bluffton, Ind., last week, killing two-score people, must have come as a sad lesson to the officers of the railway company and to the citizens and legislators who had thought that their law, passed in 1907, requiring the use of the block system, would prevent the occurrence of such disasters. The law did not touch such cases as this, and its moral effect on the management of those roads which it does not reach appears to have been nil. The main lesson, that the block system is the only practicable remedy, and that without it the only reasonable and effective safeguard for the lives of passengers is a severe limitation of speed, has been reiterated in these columns so many times that we will not here enlarge on it. We can imagine a road so well disciplined as to attain a high degree of safety while running its trains or cars under the time table and train-despatching system, but it is *only* by the exercise of the imagination; no one has ever produced any satisfactory evidence to that effect. The roads that have accomplished the best results by the old methods give no assurance that good results will continue. Therefore, those methods must be rejected.

The reader who wants the general lessons must be referred to articles that have been printed a hundred times; but we may note one or two circumstances of this case. The first is that another collision of the same kind occurred three days later, fifty miles from Bluffton, killing six persons. The point of this is that collisions *just like Bluffton* occur frequently. The records show this every month. It is only by good luck that they kill only six or one, instead of 40. The railway manager or the legislator who defers radical remedial measures because of a light death record is playing with fire—or, more appropriately, with fire and dynamite combined. But to any one who is determined to stick to the death record as his main guide of action it may be pointed out that this record is sure to be worse with cars that carry scores of passengers on the cow-catcher—which is virtually what the electric cars do—than where the front of the train is made up of a buffer consisting of a hundred tons of steel, coal and baggage.

Another lesson is the weakness of the Indiana block system law. It applies only to steam roads earning \$7,500 a mile annually. It is obvious that electric cars can smash themselves even more readily than the cars of standard railways; and even if the law were to be made applicable to electric roads, the money limit would still be subject to criticism, for a line too weak or too poorly located to earn a half of \$7,500 finds no difficulty in gathering carloads of passengers at five or ten cents a head, and

running such cars by methods which defy the plainest lessons of experience. If the people of Indiana expect to safeguard the lives of people who travel on the railways of that State they will have to do something better than pass laws which are too crude to fit the conditions and entrust their enforcement to commissioners who get their knowledge of the subject from mass meetings in which trainmen discuss questions that are out of date and railway lawyers urge reasons for not complying with any law.

A third lesson of such a collision as this should be addressed to Congress and to the legislatures of other States. Legislation concerning the block system may or may not prove beneficial. Indiana's law is weak, as we have noted; and those roads in that State which already had the block system in force have disputed the commission's powers of regulation. The law of Massachusetts seems to have produced no effect whatever, and Missouri has made no progress. Congress has had Mr. Esch's bill before it for half a dozen sessions, but has not passed it, nor even discussed it to any effect. The Interstate Commerce Commission has repeatedly recommended the passage of this bill, but the recommendation has fallen on deaf ears, and the commission goes on recording from 100 to 150 rear and butting collisions a month. Now, as we have intimated, legislation may or may not be wise. It cannot be a cure-all, in any event. But there is no excuse for allowing the whole question to go by default, as is done in Congress. No other remedial measure having been put in force, or even suggested, this measure—the federal bill—should be taken up and thrashed out. The reasons for the passage of a federal law, as set forth in these columns on December 23, 1904, remain the same now as then. The more enterprising roads have made much progress in the last six years without compulsion, but many other roads are laggards. The electric roads are not the only sinners. Many steam roads still employ methods of A. D. 1860 in train management.

LET THE GOVERNMENT GO AHEAD AND PROSECUTE AND APPRAISE THE RAILWAYS.

THE governors of some western states and representatives of a number of organizations of shippers met at Topeka, Kan., on September 22 and adopted resolutions demanding that the federal government enforce the Sherman anti-trust law against the railways for having combined to raise their rates, and that Congress pass a law requiring the Interstate Commerce Commission to make a "most searching investigation into the actual physical valuation of all the railway lines in the United States."

The government began a suit against the western railways at Hannibal, Mo., a few months ago for alleged violation of the Sherman act. Soon after at a conference at the White House between President Taft and a committee of railway presidents, it was agreed that the roads should submit the reasonableness of the proposed advances in their rates to the Interstate Commerce Commission, and that the prosecution should be dropped. The railways have carried out their part of the agreement. For them to be prosecuted now would be a breach of good faith. But a little thing like a breach of good faith does not trouble the conscience of such an organization as the Illinois Manufacturers' Association or of statesmen hungry for political pie. J. H. Johnston, traffic manager of the Oklahoma Traffic Association, withdrew from the Topeka meeting because he could not countenance the adoption of resolutions which asked the President of the United States to do an act of dishonor. Mr. Johnston is too thin-skinned. He cannot hope to measure up to the high standard of the Illinois Manufacturers' Association as long as he allows any sentiment of honor to influence him.

Regardless of the question of good faith, it seems probable that the railways ought to court rather than fear action against them under the Sherman law. It is a question if the supreme court of the United States would hold now, as it did in the Trans-Missouri Freight Association case, that every agreement between carriers regarding rates, whether reasonable or unreasonable, is prohibited by that law. Since then the Hepburn act and the Mann-Elkins act have given the commission power to reduce

any rate or prevent any advance in rates that is unreasonable, whether made by a single railway or a combination of railways. This makes so clear the intention of Congress to give over the regulation of interstate rates solely to the commission that it seems not improbable that the court would hold that the Sherman law no longer applies to railways in its full rigor. This would be in line with its decision that the Hepburn act, by implication, abolished the original jurisdiction of federal courts to determine the reasonableness of rates and vested that authority exclusively in the commission. If the court should hold that the Sherman act still applies to railways just as it did in 1897, this would bring the inconsistency between that law and the Interstate Commerce Act so forcefully to the attention of the public that it might lead to much needed remedial legislation.

Probably also the railways should not further oppose the demand for a valuation of railways. It is contended by counsel for the shippers that there must be a valuation as a means of determining whether the advances in rates the railways are now seeking are reasonable. The commission has in the past ordered many reductions in rates without the guidance of a valuation. Why can it not just as easily determine without a valuation whether advances are reasonable? As a matter of fact, it will have to do so in the pending cases. It can suspend advances in rates only for a maximum of ten months, and it could not possibly make a valuation within that time. As to the matter of valuation generally, and without any relation to the specific cases now pending, the railways probably will make a mistake if they further oppose the project. The resolutions adopted at the meeting in Topeka ask for a physical valuation. The decision of the supreme court in the Nebraska rate case indicates that not merely the value of the physical property of a railway, but all the factors that make it worth anything as a going concern must be taken into consideration in regulating rates. The railways certainly have nothing to lose by letting the shippers and politicians influence the government to make a valuation which will prove absolutely worthless the first time it is put to the test of litigation. Nor have the railways as much to lose as to gain from an appraisal that shall take proper account of all the elements that enter into the value of a railway.

The *Railway Age Gazette*, in common with many other persons and publications, has in the past opposed valuation of railways. This has been done because it has been believed that valuation is not the proper basis of rate-making and that any attempt to fix rates as a whole on that basis will be either futile or demoralizing. But the agitation for a valuation is gathering strength and probably will continue until it is successful. An attitude of opposition toward it on the part of the railways simply makes the public think they are afraid to have their assets inventoried. In every rate case attorneys for the shippers seek to make it appear that the roads are grossly over-capitalized. The result is constantly to mislead and inflame the public and to do more harm than a valuation could do. A fair valuation would simply involve the waste of several millions of dollars of public money and show that the railways as a whole not only are not over-capitalized, but are under-capitalized. In the long run it would do less harm, no matter how unwisely and unfairly it was used, than do the current misrepresentations of railway capitalization and the unwise and unfair regulation of rates that results from them.

SOME SPECIFIC FACTS FOR THE ILLINOIS MANUFACTURERS' ASSOCIATION.

THE charge is made by La Verne W. Noyes, president of the Illinois Manufacturers' Association, in a newspaper interview at Chicago, that the editorial in the *Railway Age Gazette* of September 23, regarding his organization, is "just a wild shower of malicious generalities." Mr. Noyes evidently desires us to be more specific in our statements of fact about the relations between members of the Illinois Manufacturers' Association and the railways. We shall do so.

One of the leading members of that association is Deere &

Co., of Moline, Ill., large manufacturers of farm implements. Before the Hepburn act went into effect all rates from Pittsburgh to Moline were based on the combination on Chicago; for example, the rate on iron and steel from Pittsburgh to Chicago was 18 cents, and from Chicago to Moline 8 cents, making a total of 26 cents per 100 lbs. At that time Deere & Co. received a rebate from the railways of 5 cents per 100 lbs. on all its shipments of iron and steel from Pittsburgh to Moline. As soon as the Hepburn law went into effect this company began soliciting the railways to make it a rate which would put it on the same basis it was on in the good old rebating days. The railways finally made it a through rate of 23 cents. Their traffic managers felt, however, that this was unfairly low and later raised the rate once more to 26 cents. The traffic manager of Deere & Co. then began a campaign for the restoration of the 23-cent rate in precisely the way that the *Railway Age Gazette*, in its issue of September 23, described as being followed by members of the Illinois Manufacturers' Association in getting unfair railway concessions. The files of the railways groan with the letters they received from him. Finally he got the 23-cent rate restored. *It is to-day the only rate in existence between Pittsburgh and Moline which is on less than the normal trunk line percentage scale to Moline of "122 per cent. plus."* If it is a fair rate, then every other rate between Pittsburgh and Moline is unfair. As a matter of fact, the granting of this 23-cent rate simply amounts to a published rebate of 13 per cent. to Deere & Co.

The *Railway Age Gazette* has said that members of the Illinois Manufacturers' Association are being given unfair advantages in the form of excessive allowances to tap line railways that they own. One of the members of this association of which this is true is the Commonwealth Edison Co., of Chicago. This company owns large coal mines in Illinois. It also owns a little railway called the Chicago & Illinois Midland, which hauls coal from these mines to junctions with the trunk lines. The distance that the Chicago & Illinois Midland hauls the coal is 5 per cent. of the total distance to Chicago. The through rate to Chicago is 75 cents, and of this the Chicago & Illinois Midland gets a division of 15 cents, or 20 per cent. The Interstate Commerce Commission held in the Illinois Northern case that a tap line rendering such a service as the Chicago & Illinois Midland does was not entitled to receive more than \$3.50 a car. The allowance made to the Chicago & Illinois Midland amounts to \$6 a car. In other words, the Commonwealth Edison Co., through its tap line, is receiving on every car of coal that this tap line handles what amounts to a published rebate of \$2.50 a car.

All the large meat packing concerns in Chicago belong to the Illinois Manufacturers' Association. They own the large packing concerns at points on the Missouri river. Seven years ago they bribed the Chicago Great Western, by a contract giving it a large percentage of their business, to reduce the proportional rate on dressed beef from the Missouri river to Chicago from 23½ cents to 18½ cents. The latter rate has been regarded by almost every traffic man in the country as excessively low. Last spring some of the railways started a movement to put the rate back to 23½ cents. The packers used the power that the control of a large amount of traffic gave them to get the Chicago & Alton to refuse to act with the other railways in raising the rate. The consequence is that the 23½-cent rate is now applied from Omaha, Neb., and St. Joseph, Mo., to Chicago, while the 18½-cent rate still applies via the Alton from Kansas City. The retention of the lower rate from Kansas City is an unfair discrimination against St. Joseph and Omaha. The making of the 18½-cent rate at all was and is an unfair discrimination against the shippers of practically all other kinds of traffic.

One of the complaints made by the Illinois Manufacturers' Association in the statement filed by its counsel, William Duff Haynie, at the rate hearing in New York, was that the railways had depleted their revenues by giving rebates to shippers and being fined for it. A few years ago the Burlington gave certain rebates to the Illinois Steel Co., which is a member of the

Illinois Manufacturers' Association. William Duff Haynie at that time was general counsel of the Illinois Steel Co. For giving those rebates the Burlington and two of its officers were fined an aggregate of \$60,000. Did Mr. Haynie advise the Illinois Steel Co. to accept the rebates, or did it accept them contrary to the advice of its counsel? And are these particular fines the ones the paying of which caused Mr. Haynie to deplore the reckless and unlawful way in which the railways have depleted their revenues?

Critics of the railways may say that they are at fault for allowing such grossly unfair discriminations as we have mentioned to exist. That is true. They ought to eliminate them from their tariffs. It is for the purpose of helping them to do so that the *Railway Age Gazette* is calling attention to them and intends to call attention to more of them in the future.

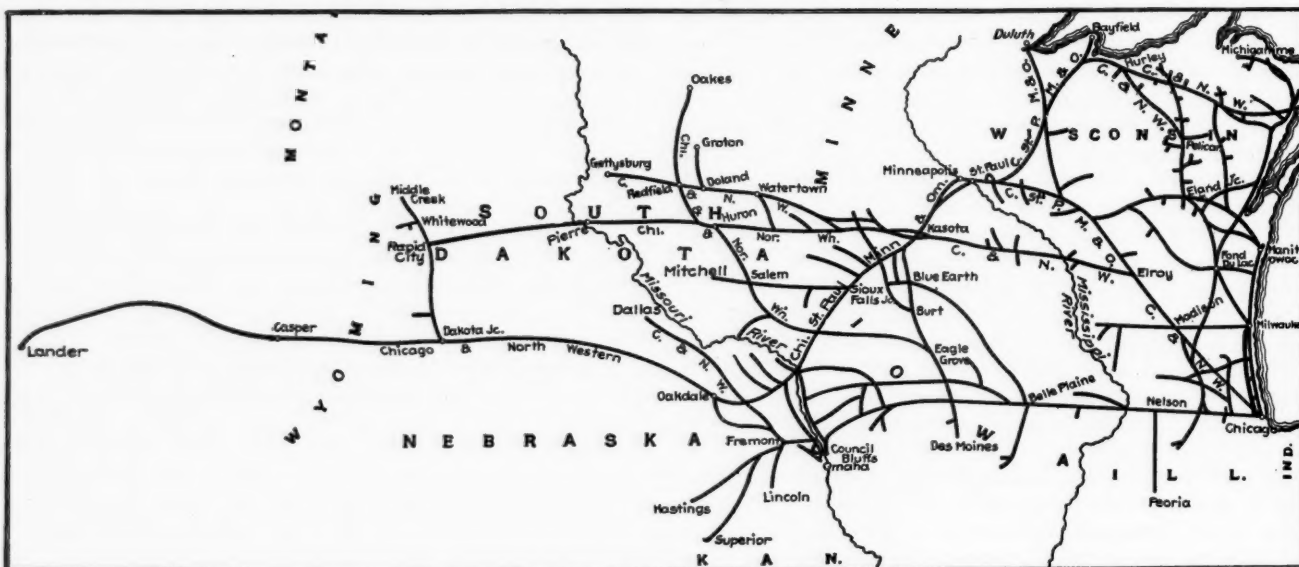
Mr. Noyes also expressed doubt as to whether the International Harvester Co. ever received any rebates, as charged by the *Railway Age Gazette* in the editorial in its issue of September 23. The Illinois Manufacturers' Association has talked so much

from the railways amounting to \$500,000 through the West Pullman switch road, and over \$3,000,000 through the Illinois Northern switch road.

Mr. Noyes having complained that the statements previously made in this paper regarding members of his association were generalities, we submit the foregoing facts as sufficiently specific.

CHICAGO & NORTH WESTERN.

THE Chicago and North Western for years has had a reputation for highly efficient maintenance of its property, and especially of its equipment, through the expenditure of very economical sums. There is probably no other railway in the country whose equipment is kept in as good repair at as moderate a cost as the North Western's. Before the classification for operating expenses was prescribed by the Interstate Commerce Commission, the North Western, in one of its annual reports, showed exactly what was spent for equipment, maintenance proper and what additional sums were spent for betterment or replacement. Of course, since the form prescribed by the



Chicago & North Western.

in the statements it has filed with the commission and issued for public consumption about rebating that we supposed its president knew all about the subject. Are the only people that he has any knowledge of ever having received rebates those who do not belong to his association? Is his knowledge of the affairs of concerns which do not belong to his association greater than his knowledge of those that do? Regarding rebates that have been received by the International Harvester Co., we beg to refer him to Interstate Commerce Commission Reports, Volume X, page 385, where he will find an opinion of the commission written by Commissioner Charles A. Prouty, entitled, "In the Matter of Divisions of Joint Rates and Other Allowances to Terminal Railroads." In this opinion he will find that the Interstate Commerce Commission used the following language:

"The International Harvester Co. owns the capital stock of the Illinois Northern and a controlling interest in the Chicago, West Pullman & Southern, operating as terminal connecting roads in and about the city of Chicago between the plant of the harvester company and various other industries and connecting roads leading to the Missouri river and other sections of the country. Until recently the charge received for services by these roads was a switching charge amounting to from \$1 to \$3.50 per car for the Illinois Northern and \$3 per car for the Chicago, West Pullman & Southern. These lines now receive, in many instances, a division of the rate which on lines reaching the Missouri river is 20 per cent. This amounts on farm machinery to \$12 per car of 20,000 lbs., as against the former maximum of \$3.50 per car. A charge of \$3.50 per car by the Illinois Northern and of \$3 by the Chicago, West Pullman & Southern would be reasonable for these switching services, and charges for such services in excess of these sums amount to unlawful preference in favor of the International Harvester Co."

In a suit brought on July 11, 1905, by R. B. Swift, a former officer of the McCormick branch of the Harvester trust, it was shown that up to September 30, 1902, the trust received rebates

commission has gone into effect, other railways have made this same distinction, but the North Western was a pioneer in this nice accounting.

While the report meets the requirements of the Commission in giving details of expenses and betterment expenditures, it leaves something to be desired in the matter of description of property, weight of rails in track, miles ballasted, etc., and gives only meager details of traffic and car and train mileage statistics.

Last year the total operating revenue of the North Western amounted to \$74,200,000, comparing with \$65,980,000 in 1909. Operating expenses in 1910 amounted to \$52,200,000, comparing with \$43,200,000 in 1909. This entirely disproportionate increase in operating expenses left the company with a smaller net income in a year of heavy increases in traffic than it had in the previous year. Since maintenance expenses are the only ones that even the most fanciful of railway critics could possibly accuse a company of padding, it is of especial interest to study what has happened in the case of a road like the North Western. Last year maintenance of way cost \$10,770,000, an increase of \$2,350,000 over the previous year; maintenance of equipment cost \$9,150,000 in 1910 and \$7,850,000 in 1909. The following table shows the unit costs of maintenance:

	1910.	1909.
*Maintenance of way per mile.....	\$1,065	\$846
†Repairs per locomotive.....	2,300	1,929
Repairs per passenger car.....	580	464
Repairs per freight car.....	37	46

*Per mile of first, second, third, etc., track, the cost of two miles of siding and switch tracks being taken as equal to the cost of maintenance of one mile of main track.

†This is for repairs only and does not include renewals, depreciation or superintendence charges.

When the Atchison, Topeka & Santa Fe first began their

betterment work to reduce the cost of maintenance of equipment expenses, they took as a standard or ideal the sums spent by the North Western per unit of equipment. The low costs of maintenance charges on the North Western has been due in the first place to a very efficient organization in the motive power and rolling stock departments. The low charge *per locomotive* is also probably due in part to the use of light motive power. In 1910 the company put into service 65 heavy locomotives for freight, but the higher cost per locomotive of maintaining this heavy motive power could not have affected appreciably the unit costs in 1910, since the equipment was not put into service until the latter half of the fiscal year and, being new, did not need any extensive repairs. As a matter of fact, however, the very severe weather was the primary cause for the heavy increase in maintenance of locomotives, and in part accounts for the higher cost of repairs to passenger train cars. There was one time during the year at which the congestion in the repair shops was severe, and this, together with the increased cost of labor, is sufficient to account for the much higher average cost of repairing locomotives. The lower cost of repairing freight train cars is presumably due to the fact that the company bought a large amount of equipment, especially freight equipment, in 1910, the total number of freight cars bought during the year being 5,860, and these new cars, needing few, if any, repairs, brought down the average for each car in service. But even with the higher maintenance of equipment costs in 1910 than in 1909, these charges amounted to but 17.54 per cent. of total operating expenses, as compared with 18.17 per cent. for the preceding fiscal year.

Transportation expenses in 1910 amounted to \$29,677,354, or 56.90 per cent. of total operating expenses. This compares with \$24,700,000 in 1909. It will be seen that there is an increase of 20.31 per cent. in transportation expenses in 1910, as compared with 1909. Of the total transportation expenses, 61.54 per cent. was for labor, 25.94 per cent. was for fuel for locomotives, and 12.52 per cent. was for supplies and miscellaneous items. If we may assume that the ratio of increase, due to an increase in rates of compensation, as compared with the increase in the number of employees, is about the same in the transportation department as the average for all operating expenses, about 14 per cent. of the increased cost of labor was due to higher wages per employee. The other heavy increase in transportation expenses, beside the cost of labor, was in the amount paid for fuel for locomotives. The increase in this one item totaled \$1,700,000 and was due to severe weather conditions and to the suspension of mining operations in the coal fields of Illinois and Iowa during the strike. If these explanations are sufficient to absolve the company from any charge of padding its expense account, as far as maintenance of equipment and transportation expenses are concerned, there remains only maintenance of way.

In this department, again, the increased cost of labor figures to a large extent, but from a study of the details of the maintenance of way accounts it is evident that severe weather conditions were responsible for the higher cost not directly chargeable to a higher grade of maintenance. For instance, removal of snow, sand and ice cost \$706,719 in 1910, comparing with \$222,989 in 1909. This is an increase of more than 200 per cent.

Traffic statistics show a year of heavy business. Freight revenue amounted in 1910 to \$49,536,839, an increase of 13.57 per cent. over 1909. The tons of freight carried one mile totaled 5,562,587,719 tons, an increase of 14.37 per cent. The average haul, however, was 141 miles in 1910, as against 148 miles in 1909, and the average revenue per ton per mile was 8.9 mills in 1910, as against 9 mills in 1909. The North Western does not publish statistics covering the proportion of the various classes of commodities carried, so that there is no way of telling how large a proportion of the total tonnage is furnished by low-grade commodities such as coal; but from the nature of the country through which the road runs, the proportion of low-

grade tonnage is probably not very high, so that an average of less than 9 mills per ton per mile indicates a comparatively low freight rate on grain and such commodities. The average train load, which was 261 tons in 1910 and 260 tons in 1909, also indicates a comparatively small proportion of low-grade tonnage.

Passenger revenues last year amounted to \$18,431,017, an increase of 9.22 per cent. over 1909. The passengers carried one mile totaled 1,012,742,855, an increase of 8.64 per cent., the average distance each passenger traveled being 35.29 miles in 1910 and 34.59 miles in 1909. The average rate per passenger per mile was 1.82 cents in 1910 and 1.81 cents in 1909.

During the year the company sold to stockholders \$30,502,800 additional common stock. No bonds were sold during the year. The total capital stock outstanding on June 30, 1910, amounted to \$154,854,486, of which the company had in its treasury \$2,337,877. The charges for construction during the year amounted to \$30,394,422, which includes \$11,032,992 spent in previous years on the new Chicago passenger terminal and carried as an item in suspense, and \$5,951,408 spent for additional equipment.

The balance sheet has been so rearranged, to conform with the requirements of the Interstate Commerce Commission that it is not comparable with the balance sheet of 1909, but it shows the company in a very strong position as regards working assets. These assets amounted to \$66,773,573, of which \$18,503,988 was cash. Working liabilities amounted to \$13,048,377, there being no floating debt.

Under Railway Construction News, elsewhere in this issue, are given the principal improvements and new construction that the company has undertaken and completed during the year.

The following table shows the results of operation in 1910 and 1909:

	1910.	1909.
Mileage operated	7,629	7,638
Freight revenue	\$49,536,839	\$43,619,091
Passenger revenue	18,431,017	16,875,668
Total operating revenue	74,175,685	65,978,471
Maintenance of way	10,774,338	8,422,265
Maintenance of equipment	9,149,217	7,545,969
Traffic	1,257,756	1,127,864
Transportation	29,677,354	24,666,868
Total operating expenses	52,153,619	43,191,239
Taxes	2,979,513	2,714,632
Operating income	18,985,612	20,056,693
Gross corporate income	21,525,371	22,610,755
Net corporate income	12,298,497	13,935,294
Dividends	9,832,038	8,764,508
Surplus	2,466,459	5,170,791

CHESAPEAKE & OHIO.

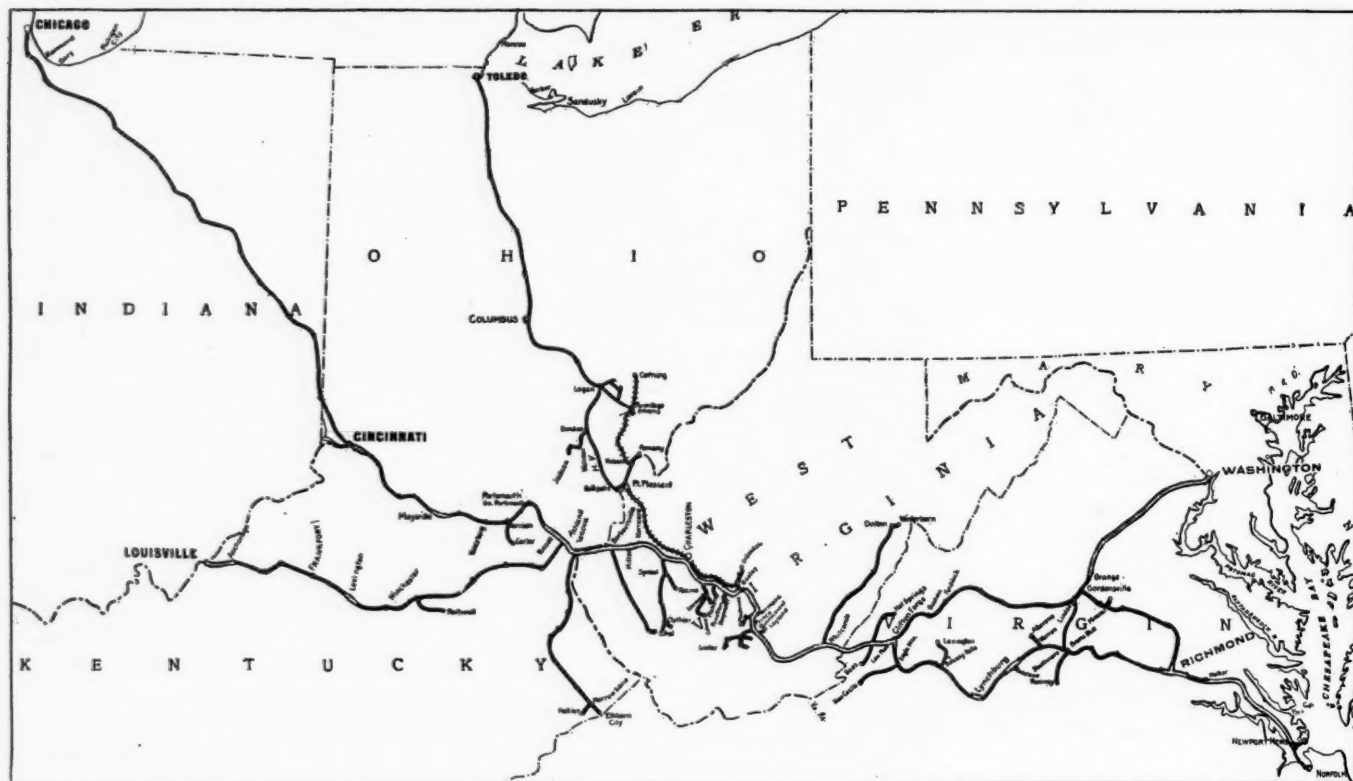
“AS a trunk line between the Atlantic seaboard and Chicago, the Chesapeake & Ohio has taken a distinct step forward. The distance from tidewater, at Newport News, to Chicago, via Chesapeake & Ohio lines, is 940 miles, comparing favorably with the length of lines of other systems from tidewater, at New York, to Chicago, ranging from 906 miles to 998.” This is a rather modest statement made by the management of the development and extension of the Chesapeake & Ohio during the past year. Not only has the C. & O. got its own line from Cincinnati to Chicago through the purchase of the Chicago, Cincinnati & Louisville, but it has also acquired a line from Gauley Bridge, W. Va., and Charleston to the Great Lakes, through the purchase of a majority of the stock of the Hocking Valley and a part interest in the stock of the Kanawha & Michigan, thus gaining two lines north of the Ohio river. The C. & O., as one of the most important of the soft coal roads, has been a conservatively and well-managed road, whose policies up to the time that control of this property was bought by the present management in January, 1909, were directed in the interest of the Pennsylvania Railroad. The Pennsylvania, because of public feeling against the control of a road by its competitor, had thought it advisable to sell its interest in the Chesapeake & Ohio to Kuhn, Loeb & Co., who held the property until they could find a suitable purchaser. When the present management took the property they had just completed the sale of the Colorado & Southern to the Chicago, Burlington & Quincy. In the C. & O. they found a property that had been well maintained, that was earning a considerable margin over

the 1 per cent. dividends that were being paid, and that had a high credit—a property that had been storing energy. The theory, probably, on which they made their investment was that here was a trunk line, the possibilities of which as a through line, and especially as a through line from tidewater to Chicago, had never been developed.

There was undoubtedly opposition to the Chesapeake & Ohio's entrance into the territory north of the Ohio river. At the time the Baltimore & Ohio bought control of the Cincinnati, Hamilton & Dayton it probably would have been glad to have bought the Hocking Valley instead of the C. H. & D., but was unable to do so. Control of the Hocking Valley at that time was held jointly by five roads, the Pennsylvania, through the Panhandle, owning two-sixths, and the Baltimore & Ohio, the Chesapeake & Ohio, the Lake Shore & Michigan Southern and the Erie each owning one-sixth. The Lake Shore's opposition

of the tonnage of coal that the C. H. & D. is receiving from the C. & O., and even after the improvements now planned are carried out the C. & O. will have a surplus of coal to turn over to other lines besides the H. V.

Before examining the new properties bought by the Chesapeake & Ohio, it is well to analyze the showing made by the C. & O. itself in the fiscal year ended June 30, 1910. The company earned 10 per cent. on its outstanding stock after the payment of interest on the funded debt. It is now paying dividends at the rate of 5 per cent. Gross operating revenue amounted last year to \$31,237,169. This is an increase of \$4,600,000 over 1909 and an increase of 133 per cent. over the gross operating revenue of 1900. Operating expenses last year amounted to \$18,936,699, an increase of \$2,569,861 over expenses of 1909. Net operating income after the payment of taxes was \$11,426,726, an increase over the previous year of 21 per cent.;



Chesapeake & Ohio System.

The Kanawha & Michigan is shown by a crosshatched line. The line from Cincinnati to Chicago is the new Chicago Line and the line from Pt. Pleasant to Toledo is the Hocking Valley.

to the C. & O.'s taking the Hocking Valley was lessened by the fact that the Lake Shore acquired the Toledo & Ohio Central and a part interest in the Kanawha & Michigan. There are therefore two competing lines running north from the Ohio river, one controlled by the C. & O., consisting of the Hocking and the K. & M., and the other controlled by the Lake Shore and formed by the T. & O. C. and the K. & M. It may incidentally be mentioned that the K. & M. may build a bridge across the river at Deepwater and make a connection with the Virginian at the instance of either the C. & O. or the Lake Shore.

The Chesapeake & Ohio at present turns over a large volume of its westbound coal traffic, amounting last year to between one and two million tons, to the C., H. & D., to be carried to the Great Lakes. By the purchase of the Hocking Valley the C. & O. will be able to ship coal over that line to Toledo.

The Kanawha & Michigan itself has valuable coal lands tributary to its lines, and it may be assumed that its coal traffic to the Lakes will be divided between the Hocking Valley and the Toledo & Ohio Central. At present the Hocking Valley's facilities for handling coal at Toledo are not adequate to take care

net corporate income after the payment of interest amounted to \$6,290,486, an increase in 1909 of 57 per cent. The increase in expenses was just about equally divided between maintenance and transportation.

The following table shows the unit costs of maintenance:

	1910.	1909.
*Maintenance of way per mile.....	\$1,215	\$1,154
†Repairs per locomotive.....	2,339	2,113
Repairs per passenger car.....	793	819
Repairs per freight car.....	68	63

*Per mile of first, second, third, etc., track, the cost of two miles of siding and switch tracks being taken as equal to the cost of maintenance of one mile of main track.

†This is for repairs only and does not include renewals, depreciation or superintendence charges.

Sixty-six per cent. of the total revenue tonnage carried by the C. & O. is furnished by bituminous coal. Last year the company carried 22,982,229 tons of freight, of which 15,000,000 tons was bituminous coal. The ton mileage last year totaled 6,123,134,875, an increase of 20 per cent. over the ton mileage of 1909. This increase of 20 per cent. in ton mileage was handled with an increase of but 17 per cent. in operating expenses and an increase of 16 per cent. in transportation expenses.

The average revenue per ton per mile of all freight on the

C. & O. is low. In 1910 it was 4.07 mills and in 1909 4.1 mills. The average revenue per ton of coal was 3.16 mills in 1910, which is slightly less than in 1909; and the average revenue per ton of freight other than coal was 6.5 mills in 1910, which is also a decrease from the average revenue of 1909. To handle profitably such a large percentage of low-grade tonnage at such a low-ton mileage rate, a line must have grades and equipment that will make possible a low operating ratio. Last year the operating ratio of the Chesapeake & Ohio was 60.6 per cent. This compares with 61.5 per cent. in 1909, and in this connection it is interesting to note that the average revenue train load in 1910 was 701 tons, comparing with 675 tons in 1909. This is a very heavy train load indeed and could only be handled over a road on which the grades were low and the roadbed and equipment fully up to modern standard practice. The Chesapeake & Ohio standard rail is a 100-lb. section. Its roadbed is well ballasted and it has a maximum grade of 30 ft. to the mile opposing eastbound traffic. The maximum grade opposing westbound traffic is 60 ft. to the mile, but from the situation of the coal fields on the C. & O. it is possible to haul coal westbound over a line with much lower grades than the maximum grades mentioned would indicate. The coal fields tributary to the C. & O. lie in the New River and Kanawha regions. Of the 15,000,000 tons carried last year it is probably safe to say that about 5,000,000 tons moved east and the remaining 10,000,000 moved west. The tonnage moving west largely originated in the Kanawha district and had a maximum grade of only 30 ft. against it, and that a single grade for but a few miles. The coal tonnage moving east over the James River division originated in the New River region; it is hauled over the one 30-ft. grade opposing eastbound traffic, and after this for almost the entire remaining distance to tidewater it seems from the profile that the coal can almost be carried by gravity. There are short branch lines running up into the coal mining region, and all of these lines, like ribs, slant down to the spine, represented by the main line of the C. & O.

On the completion of the second track, now under construction, the C. & O. will have two lines of track from Newport News, at tidewater, to Cincinnati, with the exception of nine miles in West Virginia and 48 miles in Kentucky, and the management figures that, if the present volume of traffic continues, it will be necessary to double-track the remaining 48 miles in Kentucky during the ensuing calendar year. Plans, surveys and estimates have been made for doing all of this double-track work, which will necessitate changing three tunnels which are now single-track to double-track. In the past few years a great deal of money has been spent on this second-track work. During 1910 37 miles of second track were completed, and since the close of the fiscal year 10 additional miles have been put in operation.

Last year the earnings of the Chesapeake & Ohio and its traffic returns did not show any of the advantages that may be expected to accrue to the road through its ownership of the shortest line between Cincinnati and Chicago and its ownership of a very important north and south line connecting the C. & O. main line with the Great Lakes. It will be of interest to see what the cost of the new properties has been to the C. & O. and what are the possibilities of developing these properties. The annual report of the C. & O. does not give any information about the physical condition or earning capacities of either its new Chicago Line or its Kanawha & Michigan-Hocking Valley Line to the Great Lakes, the latter two companies issuing their own reports.

The Chicago Line was in the hands of a receiver until June, 1910, and was bought by the Chesapeake & Ohio of Indiana under foreclosure sale. This is a subsidiary company, which has issued its securities to the C. & O. in exchange for advances made to it by the parent company. The Chicago Line is single track and, as we have said, the shortest route between Cincinnati and Chicago. Its entrance into Chicago is at present over Illinois Central tracks, which entrance, while having a number of advantages, is comparatively expensive, it is understood. The com-

pany can gain an entrance into Chicago, however, over the Chicago & Alton and the Lake Shore & Michigan Southern tracks at what would probably be more satisfactory arrangements than those that it now has with the Illinois Central. The Chicago Line, which is 85 per cent. tangent, is laid with 70-lb. rails and is in fair shape. Its grades are low, with the single exception of the grade out of Cincinnati for a few miles. Tentative plans are being considered for building a large yard at the top of this hill out of Cincinnati, and, since trains would in all probability have to be broken up in crossing Cincinnati from the C. & O. line to its Chicago Line, it seems likely that it will be found economical to handle traffic in light train loads up this grade and have through trains made up for Chicago in the yards at the top of the hill. To bring the line up to Chesapeake & Ohio standards eventually it will be necessary to relay the road with 90 or 100-lb. rails. A certain amount of ballasting will also be necessary.

The Hocking Valley is at present in much better physical shape than the Chicago Line, but it will be required to meet rather more exacting conditions and to be capable of handling traffic on a lower operating ratio than will the Chicago Line, because its tonnage will be more largely coal and ore. Stockholders of the Hocking Valley have been asked to increase the capital stock from \$11,000,000 to \$26,000,000; since the stock is quoted at above par, the ten to fifteen million dollars that the sale of this additional stock should bring will provide the company with funds for all the additional facilities needed in the near future for handling increased traffic. Its great advantage to the C. & O. lies not only in affording the company an outlet for its coal to the Great Lakes, but also in the opportunity that will be afforded for developing a movement of ores from the Great Lakes south into the Guyandot Valley. The region around Huntington, W. Va., is rich in possibilities of development as an iron manufacturing center, and the advantages of the establishment of new iron furnaces and iron and steel manufacturing plants along the lines of the C. & O. are obvious.

As to the cost of these two lines, the annual report of the C. & O. gives full information. To finance the purchase and to pay for the improvements, costing, in 1910, \$3,509,377, that the company is making on its own lines, the C. & O. sold \$31,000,000 convertible 4½ per cent. bonds during the year, on which the interest charges will amount to about \$1,400,000 a year. Last year the company paid about \$231,500 interest on these bonds. If we add the difference, \$1,168,500, to the total amount that the company was paying last year in interest and its funded debt, we find that the C. & O. earned pretty nearly double its 1911 interest requirements in 1910. As a result of the acquisition of the two new lines, the C. & O. has in its treasury among its unpledged assets securities with a market value of, roughly, \$20,000,000, taking the \$8,000,000 that the company has already advanced to its Indiana subsidiary for the Chicago Line at par, and figuring the Hocking Valley stock at 125 and the Kanawha & Michigan at 75. These free securities could, of course, be used as collateral to secure an issue of collateral trust notes or bonds. The company is not, however, in any immediate need of further financing.

Moreover, the balance sheet of the C. & O. for June 30, 1910, which, it may be mentioned, is an unusually simple and intelligible exhibit, shows the company in a strong position as regards working assets. The total working assets, exclusive of materials and supplies, are carried at \$12,207,967, of which \$7,740,333 is cash. Total working liabilities amounted to \$7,678,055, of which \$2,170,000 is loans and bills payable, against which the company has pledged equipment notes of equal amount. The only funded debt maturing in 1911 is \$2,000,000 first mortgage Peninsular division 6 per cent. bonds. In addition, the company has guaranteed a note of the Hocking Valley Railway for \$2,500,000.

As has been said, the Chesapeake & Ohio was paying 1 per cent. dividends on its common stock when the present management took hold of it. In 1909 this dividend was raised to 4 per cent., and in the last quarter of the fiscal year 1910 the directors put the stock on a 5 per cent. annual basis. On the

showing made in 1910 this action seems fully justified; moreover, it follows logically from the policy that had been pursued ever since the reorganization of the company in 1890. In the 20 years since that time net income, after deducting operating and interest charges, amounted to \$35,234,044, while the amount paid in dividends during the same period, including the dividend paid in 1910, totaled \$9,485,117. The stock, therefore, has been earning an equity of about \$3 to every \$1 paid in dividends, and it is logical that this equity should in time accrue to the benefit of the stock.

The following table shows the operations of the Chesapeake & Ohio proper, excluding the newly acquired lines in 1910, compared with 1909:

	1910.	1909.
Average mileage operated.....	1,937	1,897
Freight revenue	\$24,901,200	\$20,885,511
Passenger revenue	5,002,205	4,432,004
Total operating revenue.....	31,237,169	26,630,718
Maintenance of way.....	3,391,032	3,101,151
Maintenance of equipment.....	5,858,843	4,988,938
Traffic	535,208	466,042
Transportation	8,509,434	7,328,683
Total operating expenses.....	18,936,699	16,366,838
Taxes	878,744	801,600
Net operating income.....	11,426,726	9,462,280
Gross corporate income.....	12,588,091	10,171,143
Net corporate income.....	6,290,486	4,012,127
Dividends	2,668,618	1,255,814
Surplus	3,621,869	2,756,313

NEW BOOKS.

Practice and Theory of the Injector. Third edition. By Strickland L. Kneass, C.E. 171 pages; 6 in. x 9 in.; cloth. John Wiley & Sons, New York. Price, \$1.50.

Due to the changes in the design of locomotives since the publication of the second edition of this book, changes which have reacted on the method of feeding boilers and consequently on injector design, the present revision became necessary. Many of the heavy articulated types have no available space within the cab for an injector of the required capacity, and the trend is again toward the non-lifting form. Motive power officers are recognizing the advantages of utilizing waste products for heating the feed water or purifying it of scale bearing salts, and are giving more attention to the details of the boiler feeding accessories, which make for economy of operation as well as for the safety of both the passenger and employee. In the alterations and in the additional chapter of this third edition, special reference is made to modern accepted practice. It has been the object of the author to present solutions of some of the most interesting problems, with illustrations drawn from practical tests, and to describe in detail the functions of different parts of the injector.

Strikes.—When to strike, how to strike. By Oscar T. Crosby. New York. G. P. Putnam's Sons, 1910. 202 pages, 7 3/4 in. x 5 1/2 in., price \$1.25 net.

This little book should be read by every man who belongs to a labor union and by any person who is at all uncertain as to his views about the theory and philosophy of strikes. It is in large print—only about 200 words to the page—and therefore is easy to read, and the author writes both clearly and forcibly. The first half of the book is, or seems to be, almost wholly theory, though there is plenty of fact and illustration, and the style never tires the reader. On the moral side the author sets forth just what is and what is not to be found in the strike as it usually manifests itself; but, on the legal side, he gives up the profitless task of trying to set forth what is or is not legal—which would require 46 answers for the 46 states—and discusses what *ought to be* legal. In the latter part of the book Mr. Crosby deals more directly with actual conditions in the industrial world. He sees very clearly and accurately and presents his whole subject with ideal impartiality. He points out that the real competition is not between capital and labor, but between workers and workers; that is to say, the rank and file of employees strike not against the impersonal thing known as capital but against the managers, who are really workers. The most instructive chapter in the book, and the longest, is the ninth: "Who Will Furnish Higher Wages?" This will well repay a second reading by any workman who thinks that he can compel an employer to pay high

wages when the business will not warrant an increased expenditure. The only way to secure the production of a larger fund from which wages can be paid is to co-operate with the manager or employer in more efficient production. While avoiding the expression of opinion, devoting himself mainly to a discussion of principles, the author declares himself in favor of the short day, eight hours or less, for workers in all irksome, indoor, treadmill and uninteresting occupations, and of the piecework principle for increasing efficiency. He holds that arbitration cannot be a universal cure for labor troubles, and that the sympathetic strike does not pay, and the boycott and picket are looked upon favorably, at least in principle. The publishers are so anxious to please their British readers that they use British spelling to the extent of introducing "waggons," "organise" and "tram-car," as well as "honour" and "endeavour." Next we know they will be labouring to legalise the introduction of British shedges in all of our print-shop work. Thus the complacent Englishman will grow more complacent, whilst the poor Yankee, though desirous of sticking to home customs, must worry along as best he can.

Everyday Freight Rules and Tariff Manual. Compiled and issued by Charles E. Bell (chief clerk, General Freight Department, Southern Railway). 81 pages; 11 in. x 8 in. Price, \$1.

The object of this book of freight rules is to show in a comprehensive manner the practice of railways in the arrangement of tariffs. It includes the rulings and interpretations of rulings made by the Interstate Commerce Commission on the matter of arrangement of tariffs and in regard to the form and substance of these tariffs. The subject is a particularly intricate one and is given especial interest at present by the provision of the Mann-Elkins amendments to the act to regulate commerce. By one section of this amendment carriers are made liable for mistakes of their agents in quoting rates, and penalties are fixed for mistakes. It becomes, therefore, more than ever necessary for agents to be thoroughly familiar with the construction of tariffs and to be able to correctly quote a rate. While it is not any more important now than it was previously for shippers to be able to make their own investigations as to rates, this subject is of so great importance that any attempt to make the investigation of tariffs more easy for shippers is to be heartily welcomed.

The Everyday Freight Rules has two primary uses. In the first place, it should serve as a text book, from the study of which a railway agent or shipper should be able to learn how to use railway tariffs. This object the book under review serves very well indeed. The subject is treated as simply as such a complicated subject very well can be. The book contains numerous illustrations of the use of tariffs, and in these examples gives full explanations. Any student who is making a careful study of the use of railway tariffs can easily provide himself with a number of tariffs as published by the railways and practise looking up rates with the help of the rules and examples laid down in the Everyday Freight Rules.

The other object of the book, and the one for which it will probably be used most by railway agents, is to furnish an indexed compendium of the interpretation and rulings of the Interstate Commerce Commission in regard to what may be lawfully included in a tariff. The Everyday Freight Rules is divided primarily into (1) an index, (2) a set of definitions of terms, (3) a set of rules and Interstate Commerce Commission rulings in regard to routing, transit privileges, changes in rates, filing tariffs, etc., and (4) a set of typical tariffs, together with examples of their use. The first requisite of such a book should be an exhaustive index. In this respect the Everyday Freight Rules leaves something to be desired. If one has made a careful study of the book, and is already familiar with the use of tariffs, the index given should be ample; but from the point of view of a shipper or agent whose experience has not been great and who has not previously made a study of the book as a whole it would have been desirable to have made a more complete index to the subject matter. For instance, "private sidetrack" is given in the definition of terms, and reference is made to a conference ruling defining a private sidetrack; but under the general index there

is no heading "private sidetrack." We do not mean to imply that an intelligent investigator cannot find what he is looking for in the book, but it would seem that some advantage would have been gained, especially for the unintelligent investigator—and such are not lacking either among shippers or railway agents—if the general index had been made so complete that a knowledge of the arrangement of the rest of the book would not have been necessary. This defect is not of vital importance, however, because the book is not so large or so ponderous that one who wants to use it ought not to be willing to make a study of its arrangement before undertaking to look for information on a specific subject.

The book fills an actual need of both shippers and railway agents, in that it brings together in a handy form the rules that have been made by the Interstate Commerce Commission in regard to freight shipments and rates. The Interstate Commerce Commission's own publications are so voluminous, and the most important ones deal with freight and with passenger tariffs, and often with a number of other subjects that do not come directly under either of these heads, that a segregation of rules applying only directly to freight is well worth while.

Letters to the Editor.

COURTESY TO FELLOW EMPLOYEES.

Van Buren, Ark., Sept. 2, 1910.

TO THE EDITOR OF THE RAILWAY AGE GAZETTE:

From a considerable number of articles appearing in the *Gazette* bearing on courtesy, I judge that it is the idea of some that courtesy is not being taught railway employees. On this railway regular monthly class meetings are held, in which train and engine men are instructed on courtesy, rules and other things that are of benefit to employees and the company. The letter of W. L. Park, which I believe you printed, has been copied and distributed here.

I believe that courtesy is being taught railway employees quite generally, and employees are being disciplined for not being courteous and polite. Good results will be had from the publicity given this important feature of railway operation by the *Gazette*.

R. F. CARR,
Trainmaster.

EXTRACTS FROM CIRCULAR RECEIVED FROM MR. CARR.

The patrons of the company have no way of knowing but that a discourteous employee is carrying out the policy of the road; it therefore behooves every one to be very careful at all times and guard against incivility to any one, whether patron, citizen or fellow employee. If citizens, they are likely to be patrons, and by your very acts you may determine to what extent they shall become patrons. You should be courteous and polite to fellow employees in order to get the habit. Courtesy is the most essential feature of the operation of a railroad; it outranks service. If courtesy and service were equal and the standard of either for any reason had to be lowered, I would by all means say lower the service, and, if possible, raise courtesy in proportion.

On a certain well-managed road a passenger said: "Why, when they are asked a favor that they can't grant, they decline in such a way that leaves the impression that they regret their inability to comply with your request. * * * It is true it takes a little longer to get a car over the road than over the X. & Y., but when you make inquiry about your freight you always find a willing employee that is anxious to tell you all about it and explain why it is late in arriving. Then, again, when you have occasion to file a claim for freight that is damaged or short, which is seldom the case, the agent does not look at you as though you were a thief trying to rob the company, nor does he require you to answer a dozen foolish questions as though he were fishing for a loophole through which to evade the claim. * * *"

This road was one not financially or physically as well

equipped as the X. & Y., but what they lacked in being able was more than made up for by the employees, who had learned the value of courtesy. Such conversations as this can be heard at any time around hotels and on trains.

THE CAR DEMURRAGE BUREAUS.

New York, Chicago & St. Louis Railroad Co.,
Cleveland, Ohio, Sept. 15, 1910.

TO THE EDITOR OF THE RAILWAY AGE GAZETTE:

The essay on "The Car Demurrage Bureaus," in your issue of September 9, if written some fifteen years ago, would have been received as "current literature," but in this era, when the tendency is away from permitting some one else to do for you what you can and should do better yourself, the arguments in favor of maintaining superfluous bureaus are a wasted literary effort.

The conditions now surrounding the handling of car equipment, its loading, movement and unloading, compared with those of the period when the old car service associations were organized, are, as we all know, entirely different. There is no need for lengthy analysis of the dissimilarity. We all recognize the value of co-operation and uniformity of practice along certain lines in railway administration. By a slow process of evolution, the underlying principles of car demurrage have now taken exact form, and instead of the disjointed and dissimilar codes of rules and regulations in effect in different territories we have an exact and uniform practice, sanctioned by federal approval, and issued as a legal code of rules and charges in the form of a tariff.

During the years in which the car service associations were in a formative state, their main province was to induce their members to play fair, and the managers were umpires, as well between the railways and the shippers as between the companies themselves. Gradually there came into existence a class of demurrage experts; campaigns of education were successfully conducted to enlighten the shipper and educate him to co-operate with the railways, and the varied "interests," great and small, were finally brought to see that the true policy was to co-operate and thereby help themselves while helping the railways. Great latitude, however, was assumed by car demurrage experts in interpreting and applying the rules in certain territories, and the tendency toward preferential treatment of certain large owners of cars, who were also large consumers of raw material, had to be curbed. Car service collections, as a source of revenue, were frowned on. Managers of car service associations were mainly concerned in securing release of cars, a duty naturally falling on the railway owning or handling them, but often neglected.

The evolutionary progress finally reached a period when governmental regulation took a hand in the interpretation and application of the principles surrounding the problems. The shipper as well as the railway has come to recognize the futility of evasion of responsibility for an exact compliance. The rules are of uniform application, and it only remains for the railway company to enforce them honestly.

The comments of the author of the article referred to on the continued need of supervision by a corps of inspectors to spy out derelictions of the companies in evading the law are a direct indictment of the good faith of those railway officers who long ago reached the conclusion, verified now by their own experience and the significant action of a large number of others, that an efficient and harmonious enforcement of car demurrage regulations can be secured without the intervention of the machinery of a demurrage bureau.

The writer "led off" in the abandonment of this form of adjunct in enforcing car service rules, and he has no reason to change his opinion that car demurrage bureaus are an entirely superfluous appendage to a well ordered railway car record department.

A. W. JOHNSTON,
General Manager.

AMERICAN INGOT IRON—ITS DEVELOPMENT AND PRODUCTION.*

BY GEORGE L. FOWLER,
Associate Editor, *Railway Age Gazette*.

In the *Daily Railway Age Gazette* of March 16, 1910, there appeared a short description of the general characteristics of American ingot iron. The material is, however, so interesting and valuable, both from a metallurgical and from a commercial standpoint, that it deserves more than this passing notice, for it furnishes the strongest support we have yet had on a large scale of the soundness of that somewhat complicated hypothesis—the electrolytic theory of corrosion.

DEVELOPMENT OF THE PROCESS.

In 1905 the Department of Agriculture published a bulletin by Allerton S. Cushman on the corrosion and durability of fence wire. He drew the conclusion that the presence of manganese in the metal was responsible for the premature rusting, because, so far as he had carried his investigations at the time, he had found that the rapidity of the corrosion increased with the amount of contained manganese. Meantime the American Rolling Mill Co., Middletown, Ohio, had been at work in an attempt to cut down the manganese in its low carbon steel, and had proceeded somewhat on the principle that has been attempted in the reformation of drunkards: the gradual reduction of the daily potion. The company had commenced by reducing the amount of manganese thrown into the ladle of its open hearth product, and gradually cutting it down until none was put in at all. The manganese, as is well known, is used, in ordinary steel work, as a deoxidizing agent, and to counteract the effects of the high sulphur that commonly obtains. The reason is that the sulphur has a stronger affinity for the manganese than it has for the iron, forming a grey sulphide of manganese that appears in small scattered particles, which, some authorities maintain, has no detrimental effect on the metal, whereas the black sulphide of iron tends to segregate and form patches of some magnitude and thus weaken the metal. In addition to this, it (the black sulphide of iron) is more soluble in the molten iron than the sulphide of manganese, so that the latter is more likely to separate and not be included in the cold metal. But the experience of the American Rolling Mill Co. proved this addition of manganese to be unnecessary. After the use of manganese in the ladle had been entirely done away with, the process was continued by going to the furnace itself and reducing the amount put in the bath. By gradual reductions here, the use of manganese in the furnace was also eliminated.

By this method, then, the manganese content of the metal (it was a very mild steel) had been cut down from .35 to .30 per cent., and thence by small changes of .05 per cent. or less, until it had been reduced to .15 per cent. A prominent scientist recommended that a metal be made containing .10 per cent. manganese or less. The specification was a pretty stiff one, but the prize was worth the struggle and the work was started at once with that .10 per cent. as the goal. By a careful selection of stock, using pig and scrap as low in manganese as could be obtained and extending the time of heating, the percentage was gradually reduced until the limit imposed by the specification was reached.

But if a .10 per cent. manganese content gave better rust-resisting qualities than .15 per cent., it necessarily followed that a further reduction would improve the product still more. Then followed a long series of experimental heats for the reduction of the manganese and carbon. When the manganese had been cut down to .06 per cent. the carbon stood at from .03 to .04 per cent., and the average analysis of the metal produced was about as follows:

Carbon .....	.05 to .08 per cent.
Manganese .....	.06 " .08 "
Sulphur .....	.010 " .026 "
Phosphorus	Trace " .003 "

It will be seen from this that little or no attention had been paid to the last two impurities, and it was not until the point indicated by the above analysis was reached that the thought came up of attempting a cut in these impurities as well as to

obtain a further reduction of the carbon and manganese. As it stood, a metal was produced that was about 99.85 per cent. pure, and a further elimination of impurities meant an output that would approach very closely to a pure ferrite.

There were two strong commercial incentives toward attaining this result. The electrolytic theory of corrosion had been promulgated a few years before, and, as evidence was accumulated, it pointed more and more directly toward the probable soundness of the hypothesis. And as this theory indicated the probable great resistance to corrosion of a pure and homogeneous metal, that is to say, of a ferrite of uniform density, it was evident that the commercial possibilities of such a material were very great.

The second incentive was the growing demand for a pure iron for use in the construction of the cores of electrical machinery. A metal that had high magnetic permeability and which would not take on a permanent magnetization was wanted.

The attainment of both of these results was promised if the metal, pure as it was, could be still further improved. So a program was mapped out by which all of the impurities were to be cut down to a minimum. The method pursued was to first cut out the addition of the usual .030 or .040 per cent. of phosphorus that was considered necessary in order to have the metal pour readily and roll well. The phosphorus already in the metal, as well as the excess sulphur, was eliminated by the addition of a carefully selected and very pure limestone, that formed combinations with calcium, which passed off in the slag. That this work might be carried to the utmost limit great importance is attached to the quality of the limestone, which is selected with the greatest care, and is of an average analysis that will be given later.

The silicon, of course, disappeared at an early stage of the purification, and was entirely gone, as we have seen, in the iron produced when the manganese stood at from .06 to .08 per cent. with the carbon a point or two lower. In fact, under working conditions, the silicon is about all gone by the time the charge is melted. This is followed by the phosphorus, then the carbon and manganese; the phosphorus disappearing at a fairly low temperature.

PRESENT PRACTICE.

At the end of the effort a general specification was issued, and the mill is held rigidly to it, that the total impurities shall not exceed .06 per cent., a point away below what was declared two years previously that, for manganese alone, would have given the best non-corrosive metal in existence.

That this specification is met and lived up to at the furnaces is shown by a reference to the records of the heats. An analysis is, of course, made of each heat, and recorded. That record was turned over without reservation, for the investigation upon which this article is based, and heat after heat would run from .055 to .058 per cent. of total impurities. Once in a great while it would rise to .061 per cent., but this was so rare as to be out of the running. Two analyses, taken at random, are given as representative of hundreds in the record. They are:

Sulphur .....	.025 per cent.	.023 per cent.
Phosphorus .....	.004 " "	.004 " "
Carbon .....	.01 " "	.01 " "
Manganese .....	.01 " "	.02 " "
Total impurities .....	.049 per cent.	.057 per cent.
Purity of metal	99.951 " "	99.943 " "

It will be noticed in this that the silicon has been entirely eliminated from the ingot metal.

Like most other things of importance, the method of working and the furnace practice is exceedingly simple. In fact, like the standing of an egg on end, it is very easy—if you know how. And, like the proverbial production of a silk purse from a sow's ear, this pure metal cannot be obtained from anything but the best of materials. For that reason the greatest care is exercised in the selection of the scrap. Miscellaneous materials will not do at all. There is in the company's yard a pile of thousands of tons of what would be called first-class scrap: pipes, bars, etc., which cannot be used because of the impurities that it contains; jumps the sulphur. Carefully selected materials must therefore be used.

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The heating is conducted slowly and until the metal in the bath becomes fairly quiet, a condition which the aluminum added to it makes it possible to attain. The temperature is also high, 2,905 deg. Fahr. being the minimum at which the tapping can be done. It runs from this up to 3,200 deg. Fahr.

From the furnace the metal is run into a 60-ton ladle. The metal is poured into ingots of 950 and 1,800 lbs., bottom pouring being used. At present only the lighter weights are rolled at Middletown, the heavy being sent to outside mills, though it is the intention in the new works which are being built to use top pouring and 6,000-lb. ingots, as it is thought that the hot metal coming in at the top until the last will afford a better opportunity for the escape of the gases.

This explanation cannot yet be accepted as having been demonstrated to be true beyond all doubt, but is the most plausible one that has been formulated up to the present.

The cropping from the head of each ingot is about 10 per cent. of the length.

As the melting progresses samples are taken at 15-minute intervals toward the end of the heat for carbon and manganese determinations. It is found that as the oxidizing ingredients are added the manganese first drops down to just above the carbon content, then the two move in approximately parallel lines until

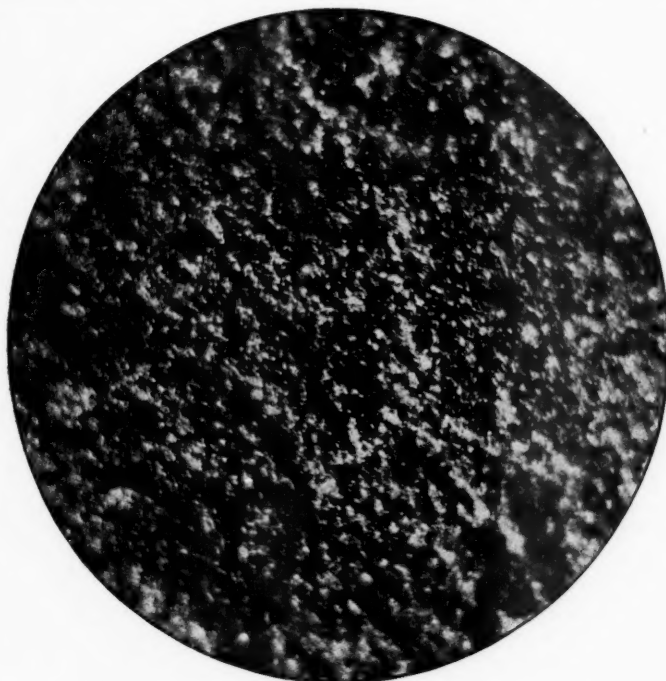
taking 25 grams of the finely divided metal, heating it in a platinum boat in a quartz tube heated to redness and passing over it a stream of hydrogen which had previously been raised to the same temperature by passing through another quartz tube heated to redness. The hydrogen is first dried by passing through caus-



Ingot Iron, After Acid Test.
Magnified 14 diameters.

tic soda and sulphuric acid, and as it leaves the first tube the water formed is absorbed in phosphoric anhydride, the moisture in the metal is absorbed in phosphoric anhydride and weighed.

The effect of the oxygen in the metal is immediately noticed when the sheets are galvanized. Its presence causes a blistering of the zinc and a sheet that is defective; it is for this reason



Wrought Iron After Subjection to Acid Test.
Magnified 14 diameters.

the carbon has fallen to about .01 per cent. Beyond this it remains stationary and the manganese continues to drop, crossing it and becoming the lower of the two.

Knowing now the detrimental effects of an excess of oxygen in the metal and the consequent necessity of keeping it down, every metallurgist and furnace man will appreciate the nicety and delicacy of manipulation required to maintain such a balance that the carbon, manganese, sulphur and phosphorus shall be eaten away to a minimum and not leave an excess of oxygen or something else equally detrimental.

Up to the present comparatively little has been done toward the elimination of the injurious nitrides, but these are now to be subjected to a systematic attack in the new research laboratory that is nearing completion.

It has been found in the manipulation of the metal and the rolling into sheets, in which the whole output of the mill goes, that the included oxygen has a very important influence on the behavior of the metal in the rolls and the character of the finished output. For that reason, oxygen determinations are made of every heat and every effort made to keep it down. The maximum permissible is .04 per cent. The determination is made by

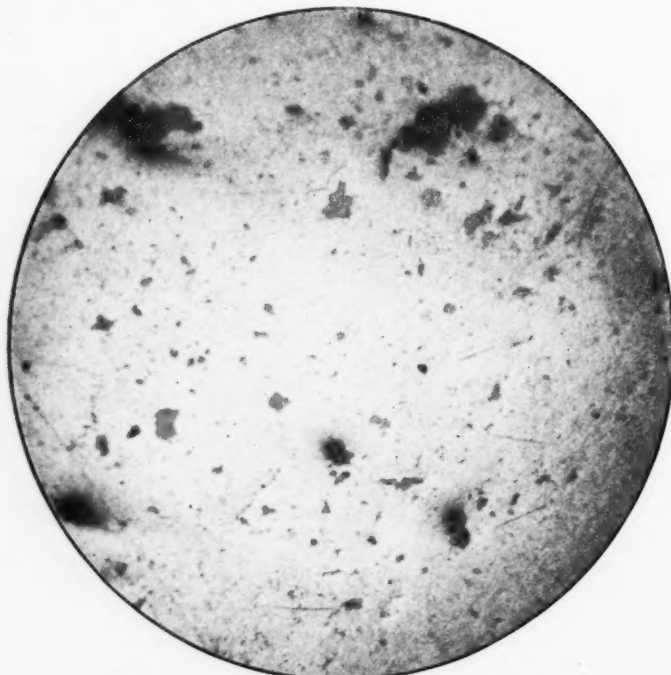


Steel After Acid Test.
Magnified 14 diameters.

that this mill is one of the few in the country, if, indeed, there is any other, that makes a regular and systematic oxygen determination of every heat. It is not as a matter of purely scientific interest that this is done, but as a commercial necessity to meet the requirements of the business.

PROPERTIES OF THE METAL.

Now, having produced a metal of 99.94 per cent. purity, what of its physical properties? It is soft, ductile and easily worked and welded if treated in the proper manner. For welding a low melting flux is needed. In the works of the company a common



Polished Cross Section of Ingot Iron.

Magnified 34 diameters.

river sand is used in preference to borax. This sand has approximately the following composition:

Silica	95.93 per cent.
Ignition loss .....	.97 "
Oxide of iron	1.62 "
Oxide of aluminum	1.28 "
Lime .....	.20 "

With this the welding can be readily done.

In working, the metal acts something like steel. Its hardness



Polished Cross Section of Wrought Iron.

Magnified 34 diameters.

by the Brinnell test is 520, annealed, and 480, unannealed. The general physical properties of a test specimen 8 in. long are:

Limit of elasticity	41,260 lbs. to 46,700 lbs.
Ultimate strength	49,770 " " 53,950 "
Elongation	33 per cent.
Reduction of area	57.3 per cent. to 68.3 per cent.

For the sake of a comparison two tests of wrought iron are given as follows:

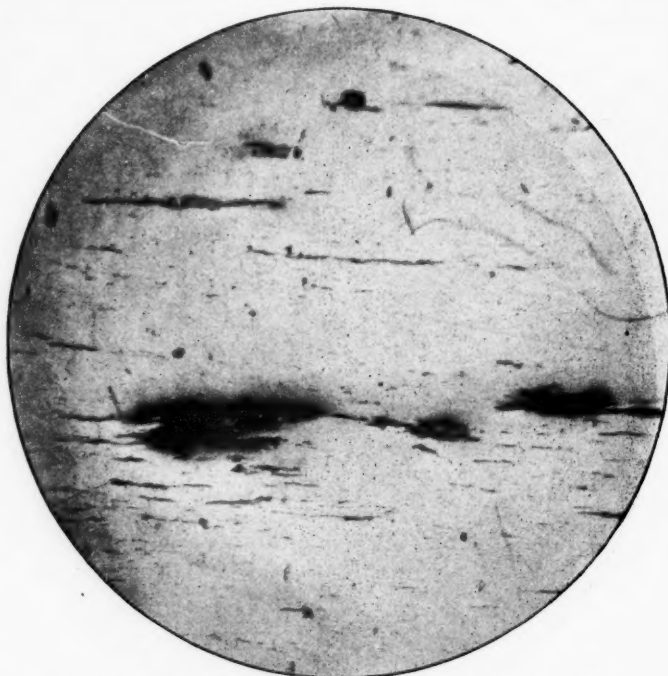
	Swedish. Charcoal.	English. Wrought.
Limit of elasticity	27,104 lbs.	28,000 lbs.
Ultimate strength	50,916 "	49,600 "
Elongation	16.7 per cent.	17.2 per cent.
Reduction of area	56 "	59 "

From this it will appear that the purification of the metal has been of great benefit in adding to its physical properties by an increase of strength, the raising of its limit of elasticity, and of about doubling the ductility as represented by the percentage of elongation and the reduction of area. From this it is fair to conclude that the slag included in ordinary wrought iron is decidedly detrimental to its strength and ductility.

Now, as to that final quality, resistance to corrosion, that was the goal set at the outset of the work.

Briefly, the electrolytic theory of corrosion is this:

"When two substances of different polarity are immersed in a suitable electrolyte, an electric current is set up and the substance from which the current flows tends to dissolve." Hence rusting depends upon the presence of impurities in the metal or on a variation in the homogeneity of its structure for the development of this electric current. Under ordinary conditions, water is the



Polished Longitudinal Section of Wrought Iron.

Magnified 34 diameters.

electrolyte and forms the necessary connection between the impurities and the pure metal. The current thus set up is active in the liberation of hydrogen due to the solution of the metal. Oxygen also appears to be necessary, and, in the electrolytic theory, it serves to remove the layer of gaseous hydrogen which may accumulate on the surface of the iron, and also combines with the metal in solution, forming the oxide of iron or rust.

It is not claimed for ingot iron that it is absolutely non-corrodible, but that it is very much less so than any other metal of which iron is the base. It has been extensively used for corrugated culverts, but as to what the actual life will be it is impossible to state, as none have been in use for a sufficient length of time to give any indication as to when the ultimate failure will occur.

The best approach to what will happen is shown by a laboratory experiment, using sheets of ingot iron, charcoal iron and steel analyzing approximately as follows:

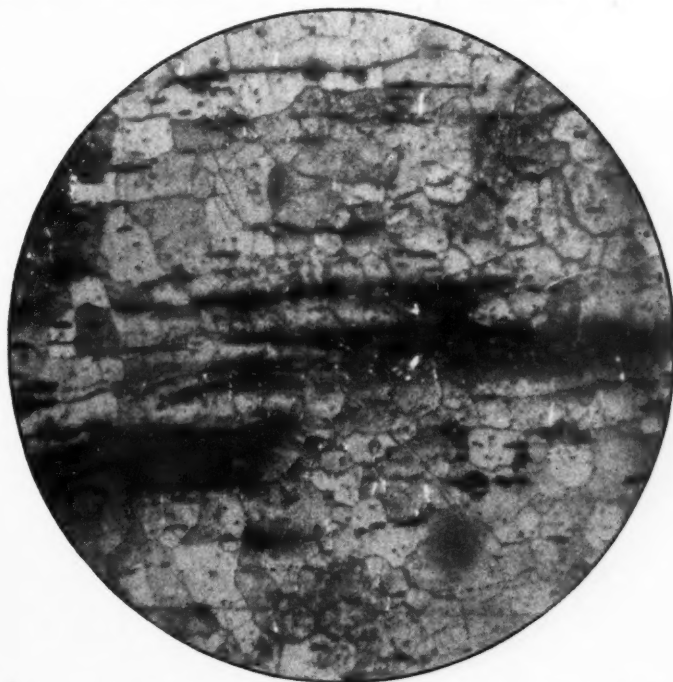
	Steel.	Per cent. Charcoal. Ingot iron.
Carbon .....	.14	.070
Manganese .....	.32	.050
Sulphur .....	.039	.021
Phosphorus .....	.131	.073
Silicon	Trace.	.030

Each plate measured 1 in. by 2 in. by 1-16 in. and they were sub-

merged for three hours in a bath consisting of a 25 per cent. solution of sulphuric acid. The loss of the ingot iron was 2.12 per cent.; of the charcoal iron 59.2 per cent.; and of the steel, 85.5 per cent. The surface of the steel was left rough, about as the finest emery cloth. That of the charcoal iron was very rough and pitted, while in the case of the ingot iron it was quite smooth, the tool marks not even being obliterated, as shown by the photograph. These differences are brought out to a slight extent by the photographs, which show small sections of these surfaces magnified nine diameters.

In addition to these statements regarding the characteristics of the metal three microphotographs are shown, which bring out very markedly the difference existing between ingot iron and ordinary wrought iron. These photographs were taken with a magnification of 87 diameters. In the case of the two of wrought iron, one is from a section cut parallel to the direction of rolling and the other at right angles thereto. In the former the elongated filaments of slag are very clearly shown; while, in the cross-section, they appear as minute spots, so numerous that they cannot fail to

Norway. In a case where the maximum value of the magnetizing force was 50 Gilberts, the residual magnetism in lines of force per square centimeter was 8,350 for unannealed Norway iron and 3,770 for the annealed. With the ingot iron the values for the unannealed and annealed were 7,250 and 3,220, respectively.



Etched Longitudinal Section of Wrought Iron, Showing Slag Streaks.

Magnified 87 diameters.

It is a common statement in the textbooks that pure iron is not a commercial product and this is true in the sense that a perfectly pure iron has not yet been put upon the market, but the metal under consideration approaches this ideal purity so closely and the physical characteristics are so nearly identical with what would be expected from a pure iron that it may be considered as such from



Etched Cross Section of Wrought Iron.

Magnified 87 diameters.

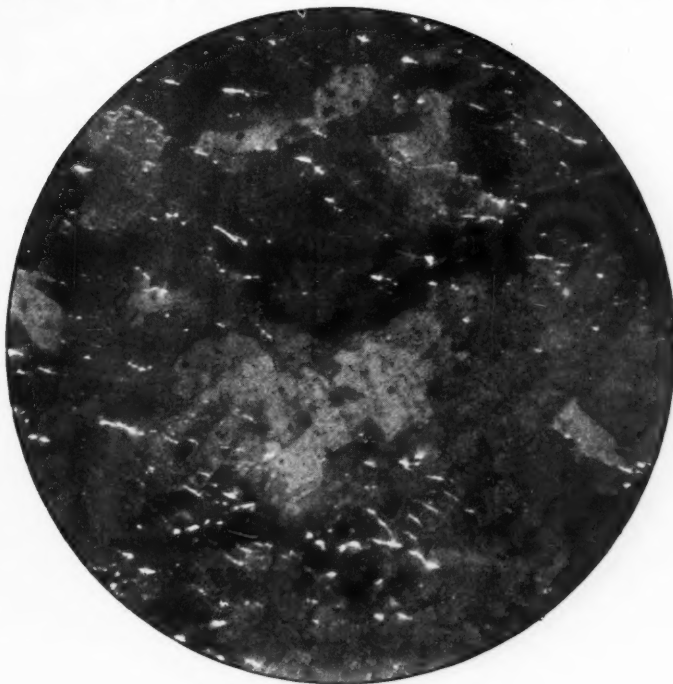
have a weakening effect upon the tensile strength of the metal. This has already been alluded to in the comparison of the strength of ingot, Swedish and English irons.

On the other hand, the microphotograph of the ingot iron shows the crystalline structure of pure iron with the minute spots of the impurities scattered through. It is noticeably free from the slag spots and streaks that characterize the wrought iron and presents an almost typical structure of pure iron.

The second property that it was desired to obtain by the production of a pure metal was that of high electrical conductivity, as compared with steel or Norway iron. A test of this made with strips of annealed steel sheets of about .10 carbon showed that the conductivity of the ingot iron as compared with the steel was in the proportion of 6.37 to 7.27 in favor of the ingot iron, or approximately 14.1 per cent. better than the steel.

This was followed by a test on the conductivity of copper wire, an unannealed bar of Norway iron and a bar of ingot iron. In this the commercial copper wire was taken as 100; the Norway iron was 11.8 per cent. and the American ingot iron was 12.85. This is a rather lower showing than that given in the textbooks, but serves to indicate the relative conductivity as compared with the Norway iron. It is well known that an exceedingly pure iron is required for the cores of the magnets of electrical machinery, in order that the residual magnetism may be reduced to a minimum.

In this respect, too, the American ingot iron is superior to the



Etched Ingot Iron.

Magnified 87 diameters.

a commercial standpoint; and, aside from the scientific interest that it possesses, as demonstrative of the probable truth of the electrolytic theory of corrosion, it does possess the great practical values of high resistance to corrosion, good electrical conductivity and low magnetic retentivity.

FAIR RENTALS FOR PASSENGER CARS.

The report of the Committee on Conducting Passenger Transportation of the Association of Transportation and Car Accounting Officers, presented at its recent meeting at Colorado Springs, showed, from figures submitted by 16 representative railways that the increased cost of providing and maintaining passenger

PASSENGER EQUIPMENT CARS—(ALL STEEL CONSTRUCTION).							
CLASS OF CARS.	No. OF CARS OWNED	COST.	PRESENT ANNUAL AVERAGE MILEAGE PER CAR.	PRESENT ANNUAL AVERAGE COST OF MAINTENANCE.	RATE OF DEPRECIATION PER YEAR.	SEATING CAPACITY OF CARS CARRYING PASSENGERS.	LENGTH OF BAGGAGE CARS, ETC.
Coaches—							
Regular Non-Motor. Road B. D.	300	\$15,994.61	45,896	*†	41‡	88	69 ft. 7¾ in.
Regular Motor. Road D.	51	11,798.00	31,490			70	64 ft. 0¾ in.
Suburban Non-Motor. Road E.	50	19,798.00					
Suburban Motor. Road D.	55	8,623.00				64	
Experimental Non-Motor. Road A. C.	132	12,313.49	26,438			52	51 ft. 4 in.
	125	13,020.00				64	
	1	11,600.00	31,675			72	
	1	15,135.72				78	
Combined Passenger and Baggage Cars—							
Road B.	51	14,500.00	46,592		4‡	42	70 ft. 4¾ in.
Baggage Cars—							
Road B.	30	10,500.00	67,780		4‡		60 ft. 3¼ in.
Road A.	6	6,100.00					60 ft. 1¾ in.
Dining Cars—							
Road B.	47	21,400.00	105,372		4‡	30	71 ft. 8½ in.
Postal Cars—							
Road A.	1	8,850.00	44,437				60 ft. 1¼ in.
Road B.	47	14,500.00	107,902		4‡		70 ft. 9¼ in.
Postal Storage Cars—							
Road B.	27	11,000.00	134,972		4‡		60 ft. 3¼ in.

* Car was in shops from January 11, 1909, to April 30, 1909.

† No record kept.

‡ Interest 5 per cent.

and baggage cars, as compared with 20 years ago, is from 50 to 100 per cent., according to class, with an average increase in seating space of cars carrying passengers of but approximately 25 per cent. and with an average increase in length of baggage cars, etc., of but approximately 15 per cent.

The cost of all-steel cars as compared with wooden shows

that steel costs from 50 to 100 per cent. more, according to class of car. In view of this enormous increase, the committee asked for comparative figures of the cost of maintenance of steel and of wooden construction; but owing to the limited period during which all-steel cars have been in passenger service it was unable to obtain any useful information for this purpose.

The rate of depreciation, shown in the table given herewith, for all-steel cars, is 4 per cent. as compared with an average of 3.5 per cent. against wooden cars; but this is arbitrary, at best, and is not to be taken as indicating a necessity for charging off a greater rate of depreciation against all-steel cars, for the figures for steel were furnished by but two companies, both of which charge off 4 per cent. against both wooden and all-steel cars; while the figures for wooden equipment were received from 16 roads and the average represents rates ranging from 2½ to 5 per cent. It is obviously impossible at this time to definitely fix the rate of depreciation on all-steel passenger cars.

As the present mileage and per diem rates, as between railways, for passenger cars, were made by the American Railway Association about 20 years ago, and, as these increases in cost make these old rates very low, the committee recommends rates as follows:

Joint Service Rates.

Coaches and chair cars, 3 to 5 cents a mile, according to seating capacity.

Tourist and colonist cars, 3 cents a mile.

Dining, café, club and parlor cars, 5 cents a mile.

Combined passenger and postal cars, 3 to 5 cents a mile, according to length. Baggage, express, combined baggage-express, and mail storage, 1½ and 2 cents a mile, according to length.

Combined baggage-mail and combined baggage-mail-express, 2 to 4 cents a mile, according to length.

Per Diem Rates.

Coaches and chair cars, \$5 to \$8 a day, according to seating capacity.

Tourist and colonist cars, \$5 a day.

Dining, café, club and parlor cars, \$8 a day.

Combined passenger and postal cars, \$5 to \$8 a day, according to length.

Baggage, express, combined baggage-express, and mail storage, \$3 to \$5 a day, according to length.

Combined baggage-mail and combined baggage-mail-express, \$4 to \$7 a day, according to length.

Under the present practice of charging an arbitrary rate of \$5 a day for coaches and \$3 a day for baggage cars, etc., when lent on a per diem basis, regardless of capacity, the custom has prevailed of lending the poorest cars available. By providing a sliding scale of rates, according to seating capacity and length of car, an incentive is created for the lending road to provide the borrower with a better grade of cars; or, at any rate, the tendency to always pick out the poorest cars is largely or wholly neutralized.

The recommendations of the committee were not adopted by the association; the reason for non-action being apparently the

PASSENGER EQUIPMENT CARS (WOODEN CONSTRUCTION).										
CLASS OF CARS.	No. OF CARS OWNED TO-DAY	INITIAL COST.		PRESENT ANNUAL AVERAGE MILEAGE PER CAR.	PRESENT ANNUAL AVERAGE COST OF MAINTENANCE.	RATE OF DEPRECIATION PER YEAR.	SEATING CAPACITY OF CARS CARRYING PASSENGERS.		LENGTH OF BAGGAGE CARS, ETC.	
		Cost 20 Years Ago.	Cost To-day.				20 Years Ago.	To-day.	20 Years Ago.	To-day.
Coaches	10,115	\$4,905.06	\$9,483.11	42,812	\$529.28	3.4%	50 to 72 avg. 61	62 to 86 avg. 75	.....	.....
Comb. Pass. and Bagg. Cars....	1,791	4,268.99	7,637.44	36,813	489.65	3.25	15 to 44 avg. 31	30 to 53 avg. 42	45 to 60 ft. avg. 52 ft.	60 to 75 ft. avg. 66 ft. 6 in.
Chair Cars (owned by Railroad).....	628	6,494.80	9,796.77	78,650	964.72	3.74	43 to 60 avg. 48	53 to 85 avg. 63	.....	.....
Sleeping Cars (owned by Railroad)...	367	14,509.14	19,401.00	81,783	627.28	3.38%	25 to 48 avg. 40	30 to 64 avg. 52	.....	.....
Parlor Cars (owned by Railroad).....	329	9,614.71	13,616.67	37,870	556.01	3.4%	24 to 46 avg. 33	30 to 53 avg. 39	avg. 60 ft.	60 to 75 ft. avg. 69 ft.
Tourist Cars (owned by Railroad)....	145	5,800.00	11,863.00	68,739	550.00	3.5%	.....	56	.....	.....
Colonist Cars (owned by Railroad)...	304	5,325.00	9,842.50	61,853	547.53	3%	50 to 70 avg. 59	50 to 72 avg. 65	.....	.....
Baggage Cars.....	2,749	3,094.18	5,193.68	68,439	503.76	3.5%	.....	.....	40 to 59 ft. avg. 51 ft.	40 to 70 ft. avg. 60 ft.
Express Cars.....	513	2,634.00	3,968.74	60,898	351.03	3.7%	.....	.....	40 to 50 ft. avg. 46 ft. 8 in.	43 to 60 ft. avg. 52 ft. 3 in
Dining Cars.....	435	11,332.89	16,956.35	94,468	888.82	3.4%	20 to 40 avg. 28	30 to 40 avg. 31	60 to 79 ft. avg. 66 ft.	60 to 80 ft. avg. 71 ft.
Comb. Baggage and Mail Cars.....	1,012	3,455.74	5,760.59	63,371	421.32	3.5%	.....	.....	40 to 60 ft. avg. 52 ft.	50 to 70 ft. avg. 61 ft.
Postal Cars	599	4,225.48	6,942.83	88,011	544.32	3.4%	.....	.....	30 to 64 ft. avg. 54 ft.	50 to 64 ft. avg. 61 ft.
Postal Storage Cars.....	70	3,749.89	5,463.72	102,794	505.22	4%	.....	.....	40 to 64 ft. avg. 55 ft.	60 to 64 ft. avg. 61 ft. 5 in

objection of one or a very few interests. As in most inter-railway negotiations nowadays, a single objector seems to have more power than any number of progressives. There is no justification in logic or equity for maintaining arbitrary and excessively low rates on passenger cars. In dealing with freight cars the magnitude of the accounting problem and the great complexity of the interchange question introduce such great difficulties that simplicity and uniformity are necessary, and a sacrifice of equity is warranted; but the work of accounting for passenger cars is comparatively simple. Why should not adequate rates be collected by every lender?

PHILIPPINE RAILWAY COMPANY LINES.*

The Philippine Railway Co. was organized to build lines on the islands of Cebu, Panay and Negros, about 100 miles on each. Work was begun in 1906 by J. G. White & Co., who had represented the syndicate of bankers who promoted the company.

The lines proposed penetrated jungle and wild lands not before inhabited, lacking roads, bridges or even trails in many sections.

Cebu island, about 400 miles south of Manila, has an area of 1,762 square miles, with a population of 590,000. Along the line of railway there is a population of about 310,000, or about 5,158 to the mile of line. The density is about 515 in the territory feeding the line. Cebu, the principal city, has a population of 56,000. The island produces hemp, tobacco, sugar, copra, corn and rice. The export of hemp from Cebu makes it the leading shipping port for that product in the Philippines.

The island of Panay lies about 300 miles south of Manila, with an area of 4,600 square miles and a population of 745,000. The line of railway serves a population of 315,000, or 3,500 a mile, with a density per square mile of 200. The land is fertile along the railway and most of it is under cultivation. The principal products are rice, copra, tobacco, sugar, hemp, native cloths and dried fish. Iloilo, with a population of 45,000, is the southern terminal of the line and is the largest sugar port in the Philippines. It is the outlet for not only all the sugar of Panay, but of the rich island of Negros as well. Much land suitable for sugar cultivation has been made available by the railway and a large increase in production may be expected.

In Negros, with an area of 4,881 square miles and a population of 460,000, the railway will serve about 250,000, with an average of 3,720 per mile of road and a density of 150 per square mile of territory affected. The western half of the islands is the great sugar producing region of the Philippines

*An abstract of an article in the *Far Eastern Review*, to whom we are indebted for the photographs.

and it is this section through which the railway will operate. The capital of western Negros, Bacolod, is the terminus of the proposed line, and it will be connected with the terminus at Iloilo, in Panay, by a railway ferry over a distance of 25 miles. As Negros is without a good harbor, it is the purpose of the company to construct one at Bacolod. The principal products are sugar, copra and rice and lumber. Large areas of sugar lands will be opened up by the railway and the production of sugar in the island should rapidly increase with improved transportation facilities and a permanent market.

The construction of the line in Negros will not include any heavy grading, but as there are a number of wide and deep



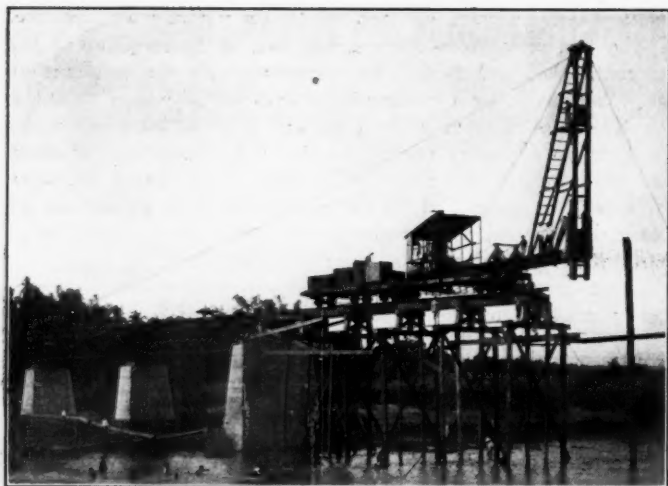
Standard Finished Track; Cebu.

rivers to cross, it will bring up the cost, while the pier and breakwater work at Bacolod will add a heavy charge to the construction of the line. Its successful operation will depend largely upon the development of the sugar industry. Definite location of the line has been completed, but no construction work has been done up to this time.

Much of the grading on the Cebu line was exceedingly heavy, and this, with the large number of rivers and streams to bridge, made the construction very costly, although no engineering difficulties were encountered. The necessity of combating the floods of the rainy season had to be considered in the construction of bridges, and while many of the streams are insignificant



Work in Rolling Country; Panay.



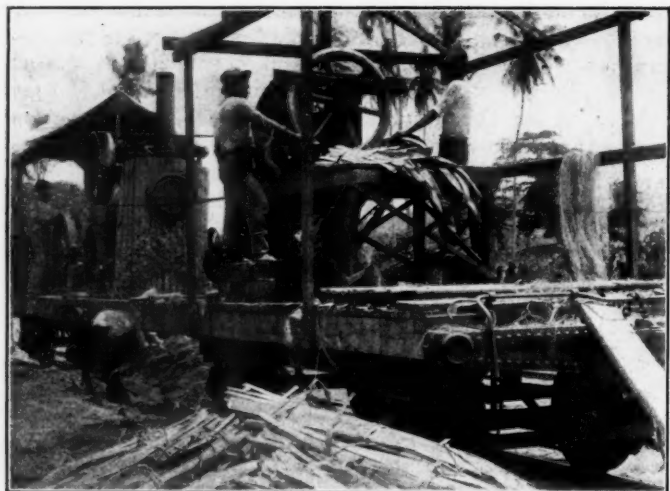
Bridge Construction; Panay.



Bridge in Cebu with Enlarged Foundations on Account of Soft Bottom.



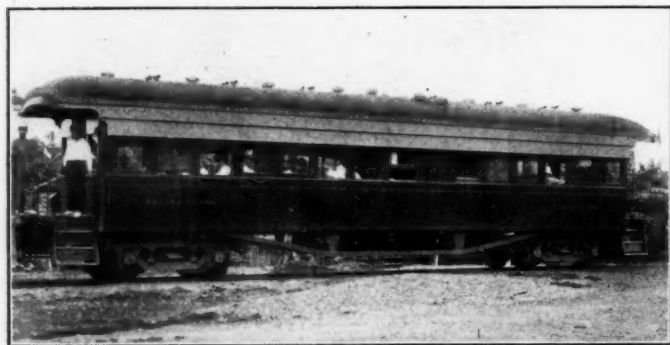
Standard Third Class Station.



Traveling Maguay Stripping Machine.



Heavy Fill Work.



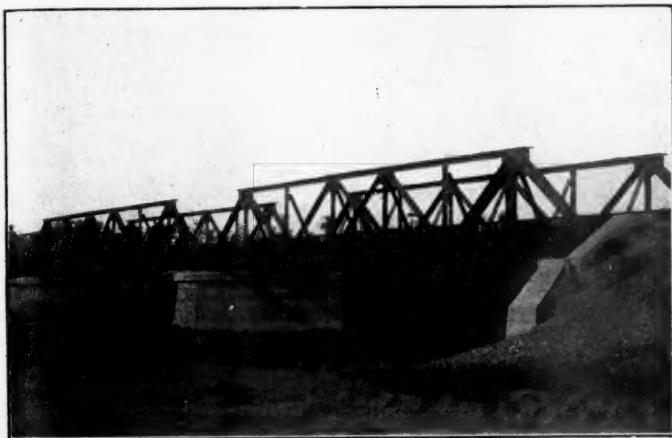
Combination First and Second Class Coach.



Passenger Station and Office Building.

in the dry season, during the heavy rains they become swollen torrents. In all, on this line, the bridges aggregate over a mile in length, all built of concrete and steel.

At sub-grade the standard width of the roadbed was built 14 ft. on the shoulders with allowance for shrinkage and heavy rains. In conformity with the Philippine Government regulations the gage is 3 ft. 6 in., as provided for all the railways in the islands. Australian ties were used in the early construction, but the native hardwood tie was later substituted and is now used exclusively by this company in all its construction. The ties are 5 in. x 8 in. x 7 ft. and native hardwood is expected to last at least 15 years. The maximum grade is 1 per cent. and



Cot-Cot River Bridge.

the maximum curvature is 6 deg. The construction over the swamps and low lying agricultural lands was in many places very costly, as roadbed sank in some instances from 5 to 8 ft. In all, 1,860,000 cu. yds. of earth were moved. Ballast pins were located in the river beds and gravel used exclusively.

There are 22 station buildings, divided into first, second and third class, built of reinforced concrete; indeed, in all the buildings concrete and steel were used. This class of permanent construction was believed desirable even at a much higher first cost, in view of the serious deterioration caused by the climate and the activity of the white ant, as well as the security from loss by fire. Sixty pound steel was used for the entire line with the exception of 20 miles near Cebu laid with 70-lb. steel.

For maintenance of track Filipino labor is utilized under the supervision of white foremen. The mechanics in the shops include natives and Chinese working under white supervision. Filipinos are also employed for clerical work, as well as agents and operators, and the management has found them very satisfactory in each of these capacities. The conductors and engineers are Europeans, but it is expected that Filipinos will be substituted, with the exception of a few Europeans retained as instructors. As evidence of the accuracy of the native operators, the standard code of the American Railway Association is used in dispatching by telephone, and so far there has been no complaint as to their ability or adaptability to work accurately and speedily. There are eight regular mixed trains, four daily in each direction, making from 25 to 30 miles an hour.

The railway company is endeavoring to encourage the natives of Cebu in the cultivation of maguey and, co-operating with the Philippine Agricultural Bureau, has already distributed over 2,000,000 plants free of charge. In addition to this, the company has a maguey stripping machine which is installed on a flat car and moved from point to point to strip the plant without charge. The result has been great interest among the native farmers in this industry and it is expected that the export of this product alone will result in many millions of dollars coming into the province. An effort is being made to induce the farmer to undertake the best methods of culture and already the improved returns received on the better quality of fiber have impressed the planter with the advantages of giving his best attention to the growing plants. The development of the sugar

and tobacco growing industry in Cebu gives promise of large returns, and with better transportation facilities and prices the native will be encouraged to do his share. In the meantime an effort is being made to increase the supply of work animals with government aid and a well organized campaign against rinderpest is to be maintained.

The line in Panay was, last May, nearly ready to be opened from Iloilo to Capiz. The work of construction has been conducted from both ends simultaneously. The line from Iloilo to Passi, about 34 miles northward, is across an alluvial plain intersected by a few heavy ridges, the latter making very heavy work. From the latter point to Dumarao it crosses the watershed that practically divides the island of Panay into two great fertile plains. The southern approach to the summit is a maximum grade of 1 per cent. and on the north approach the grade is 1½ per cent. for about a mile. The balance of the line from the watershed to the northern terminus at Capiz is across level country interrupted by irregular ranges of hills. The construction in the flat country is exposed to serious floods during the rainy season and it was necessary therefore to make fills from 15 to 25 ft. high. This, together with the heavy work in the hills and the many rivers to bridge, brought the cost up very high. The total grading is estimated at almost 4,000,000 cu. yds. and the steel and trestle bridges aggregate in length over 1¾ miles. The Panay river bridging aggregated 2,250 ft. of steel.

The main terminal is at Iloilo, and at this point the company has secured a site on the waterfront for large warehouses with a depth of water alongside of 24 ft. so that freight may be



Standard 100-Ft. Span Bridge; Cebu.

transferred to vessels at minimum expense and maximum expedition. The site was practically an island forming one bank of the Iloilo river and much of the ground had to be filled in. The foundations for these buildings were laid on reinforced concrete piles. The central machine shops, etc., for both Panay and the Negros divisions, are located here. The shops are so equipped that the company can build its own locomotives.

In all, on the Cebu and Panay divisions there are 14 locomotives, 32 passenger cars and 184 freight and work cars.

The same standards are maintained in Panay as in Cebu, as well as the character of the skilled and unskilled labor.

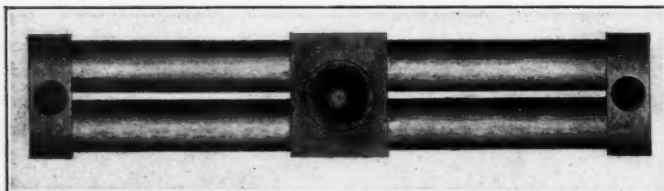
As in Cebu, but perhaps more serious, has been the damage to industry by the rinderpest and surra among the stock, and at present many formerly prosperous communities are suffering from extreme poverty. From statistics available not over one-fifth of the rich improved lands are now under cultivation and, instead of a steady development of wild lands and the annual increase of the area under culture, many sections do not produce one-tenth of the returns of, say, a decade ago. The company is assisting the native to develop this section by distribution of seed and encouraging industry. In this the Philippine Government is giving generous support. With work animals or machinery, Panay province would become one of the most prosperous in the archipelago.

DEVELOPMENT OF ARTICULATED LOCOMOTIVES.

BY C. H. CARUTHERS.

An articulated locomotive is generally understood to consist of two distinct trucks, each of which contains the complete running mechanism of a single locomotive, but receives steam from a boiler common to both, to which they are attached by such side or center bearings and steam connections as will permit them to independently follow the curvature of the lines upon which they are operated.

The first of the type was built in 1831 at the West Point



Plan of the Double Boiler on the "South Carolina," Built in 1832.

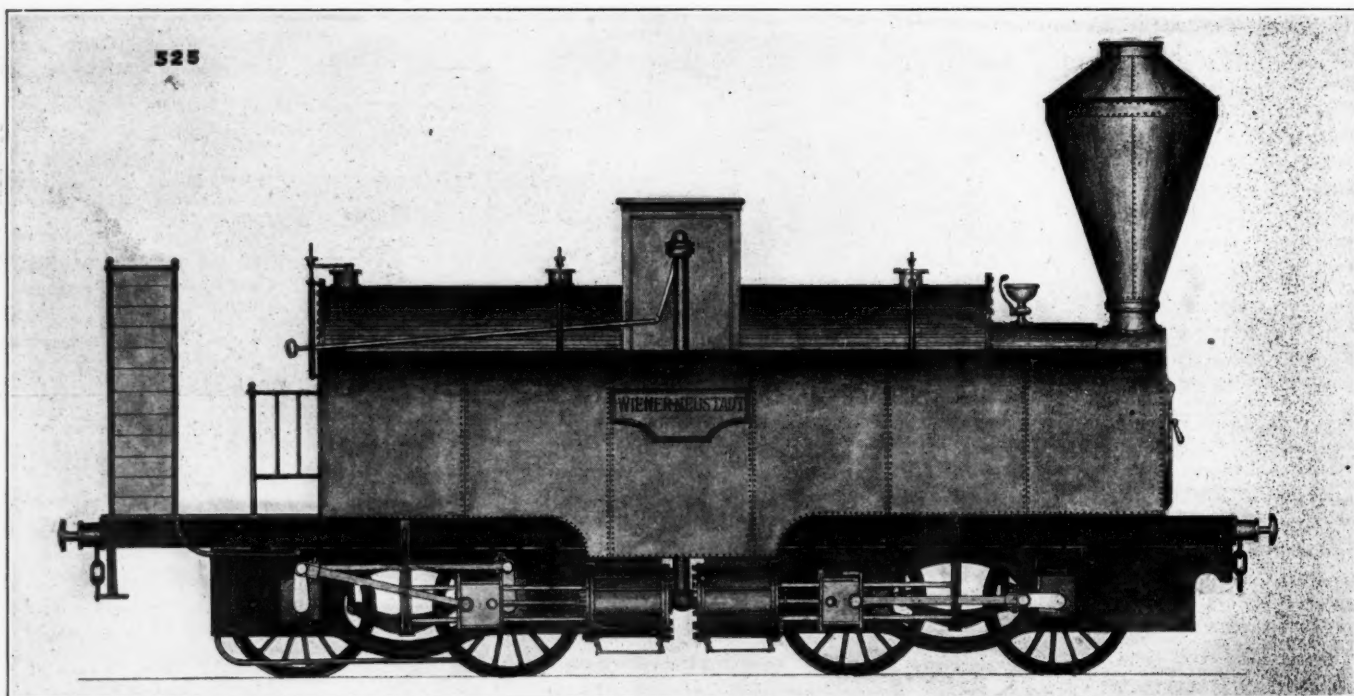
Foundry, from designs by Horatio Allen, for the South Carolina Railroad, upon which it was placed in service in 1832. It was named South Carolina and had two trucks with one pair of driving wheels and one pair of leading wheels in each, the driving wheels at the inner ends of the trucks. The center of each driving axle formed a single crank and but two cylinders in all were used. These were not on the trucks, but were placed at opposite ends of the engine at the bottom of the smoke-

which two parallel barrels extended in each direction, each pair terminating in a single oval smokebox surmounted by a tall smokestack. This entire combination was carried on the two trucks by suitable transverse plates and swivelling castings, practically as the body of an eight-wheel car is carried to-day.

In Clark & Colburn's "Recent Practice in the Locomotive," 1860, this engine is aptly described as a "locomotive in which the boiler of a single engine might be said to be placed upon the independent running gears of two ordinary locomotives," and the statement is added that by the end of 1833 four of these machines had been built and placed in service on the South Carolina Railroad.

Next in order, according to statements in an article in *Engineering* (London, England) of November 14, 1873, page 396, is *Seraing*, built in 1850 at Semmering, Austria, for the Semmering Railway. In this machine no weight was carried on the trucks at the pivotal points, but on the four bearing surfaces on each. This engine, the article referred to concludes, "soon proved a failure."

Hermann von Littrow, of Neustadt, near Vienna, Austria, a few years ago contributed an interesting article on Austrian locomotives to an American technical journal, and among the numerous illustrations accompanying it was one of an engine named "Neustadt" which is stated to have been built at Neustadt in 1851 for the Semmering Railway, "with its beautiful Payerbach Loop." The name plate on the side of the water tank of this engine is inscribed "Wiener-Neustadt," which is the name given to the shops in which it was built many years after the date assigned to it, but this plate may have been substituted for the original inscribed "Neustadt," in later years of its service. It was



Articulated Locomotive Built at Neustadt, Austria, in 1851, for the Semmering Railway.

boxes to which they were rigidly attached with sufficient inclination to enable their centers to coincide with those of the driving axles, to which they were connected by rods fitted with "ball" brasses, probably somewhat similar to those used by M. W. Baldwin in the parallel rods on the flexible trucks with which he for many years equipped his six and eight-wheel connected locomotives. Although no mention is made of the fact in any of the numerous articles consulted about this engine, it is probable that similar connections were used in the valve gear, which is said to have had two eccentrics to each engine, and was doubtless of the "drop hook" type so generally used in early engines.

The boiler had a single firebox at its center from the ends of

not unlike the Meyer type of articulated engine, having apparently a single boiler carried on two swivelling trucks with the cylinders at their inner ends. A peculiar rectangular construction at the center of the boiler contains the throttle valve, and from its sides the steam pipes are carried to the cylinders. Mr. Von Littrow states that the engine was not very successful, and that no others of the design were built.

From the data at hand I find it somewhat uncertain whether two articulated engines were built in the years 1850 and 1851, as just referred to, or whether the writers of the articles quoted from may not refer to the same engine. Each assigns a different name, place of building and date of construction to the engine he writes of, but the reference to only one in the historical sketch

referred to and the fact that both authors locate their engines on the Semmering Railway, lend color to the idea of reference to the same engine.

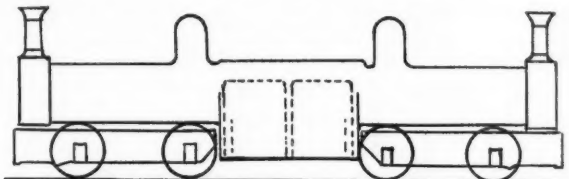
About 1864 Robert F. Fairlie, an Irish engineer, designed the articulated engine known by his name and during a number of years following many of these were built, especially for narrow gage and mountainous lines. This type generally has two swivelling trucks with their cylinders placed at the outer ends. The boiler is carried on a separate frame which rests upon the trucks through the medium of transverse bars and swivelling castings in such a manner as to permit independent movements of either truck in passing around curves. As usually built, the Fairlie boiler exactly resembles two ordinary locomotive boilers rivetted together at the side and roof sheets with the back heads removed, and the fire doors placed in the sides of the fireboxes, and with a cab about the size of that of an ordinary engine covering the central space between the two domes.

Some Fairlies built in later years have two distinct boilers with a firing gangway between, thus avoiding the use of fire doors in the sides of the fireboxes, as the usual double construction requires. In such instances, both boilers were carried on a single continuous frame, as where the standard boiler of the type was used, and the steam and swivelling connections to the trucks were the same.

In the issue of *Engineering* (London, England), for August 21, 1874, a double page inset contains eighteen small reproductions of erecting cards showing twenty-one of these engines that had up to that time been placed on various railways in Europe, North

past years built a number of engines for various American and Mexican railways with the running gear of the forward truck arranged on the Fairlie principle, and the tender carried on an extension of the engine frame and supported by a six-wheel truck without any self-propelling devices. In 1892, however, the latter firm built an engine for the Sinnemahoning Valley Railroad, in which the Vaucrain system of compound cylinders was applied to both trucks.

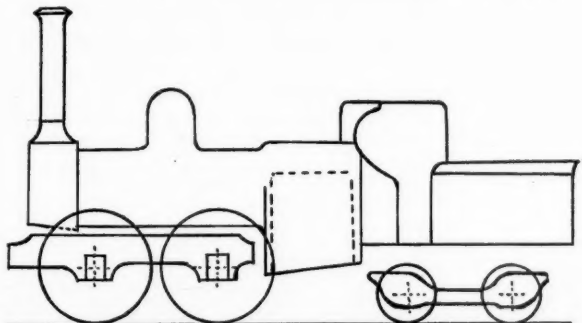
Although the resemblance of the Fairlie engines to the earlier Austrian designs may have been noticed, it is distinctly stated in the article referred to in *Engineering* that Mr. Fairlie was not even aware of the existence of these machines until after the construction of those built from his own designs.



"Little Wonder," Festiniog Railway (Waes).

4 cylinders	8 1/2 x 13 in.
Number of tubes	218
Diameter of tubes	1 1/2 in.
Diameter of driving wheels	28 in.
Weight, service	43,680 lbs.

The next link in the chain of articulated engines is the "Meyer." This type was designed by J. J. Meyer and his son, Ad. Meyer, of Brussels, Belgium, and my records indicate that their first locomotive was named "Avenir" and was probably built about 1873. The accompanying illustration of No. 300, built at the shops in Brussels, of the "Compagnie Belge pour la Construction de Machines et Material de Chemin de Fer (M. Charles Evrard, Director), Brussels," in 1873 for the Central Railway of Belgium, and exhibited in the same year at the exposition in Vienna, Austria, is partially reproduced from a most excellent set of drawings appearing in *Engineering*, London, of July 11, 1873, pages 35-36, and will convey a fair idea of the type, which it will be seen is practically a Fairlie with an abnormally long boiler of the single locomotive type. The cylinders of No. 300 are located on the inner ends of the trucks. One striking point in which the Meyer differs from the Fairlie is that no frame is provided for the boiler in the Meyer, but at the forward end a shallow rectangular box of wrought iron is riveted to the under side of the shell from a point some distance behind the smokebox and extending



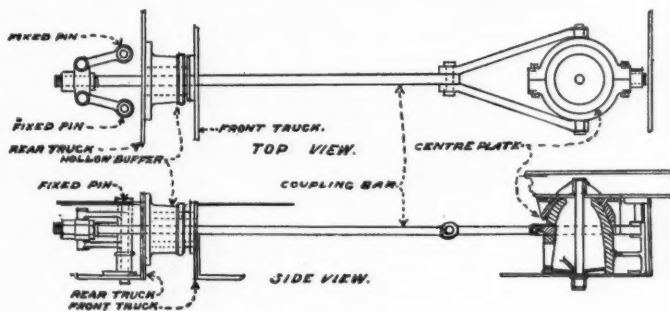
Fairlie Engine for the Great Southern & Western (Ireland).

2 cylinders	15 x 20 in.
Number of tubes	176
Diameter of tubes	1 3/8 in.
Weight, service	80,304 lbs.

America and South America. Eight have three pairs of driving wheels in each truck, and the weights range, as far as given, from 82,320 lbs. to 102,816 lbs. The cylinders vary from 11 1/2 in. x 18 in. to 17 in. x 22 in. Twelve of the lot have only two pairs of driving wheels in each truck, and range in weights from 43,680 lbs. to 51,520 lbs., and in diameter of cylinders from 8 1/4 in. x 13 in. to 13 in. x 20 in. One of the preceding twenty was used on a 5 ft. gage, six on gages of 4 ft. 8 1/2 in. and thirteen on gages ranging from 23 1/2 to 43 in. The twenty-first engine was for the Great Southern & Western Railway of Ireland, and only used steam in the forward truck, which contained two pairs of driving wheels and two 15 in. x 20 in. cylinders. The rear truck contained two pairs of small wheels and merely carried the tender, which was built on an extension of the engine frame.

One of the most notable of these was "Little Wonder." According to a description published in a guide to the London & North Western Railway of England, in 1876, this engine had each truck fitted with two cylinders, or four in all, of 8 1/2 in. x 13 in., and two pairs of drivers, or four pairs in all, 28 in. in diameter; and on the heavy grades of the Festiniog Railway in Wales, of only 23 1/2 in. gage, on which it was used, and often with three or four curves in the length of its train, it drew a maximum load of 61,600 lbs., consisting of itself, 3 passenger carriages (1st, 2nd, and 3rd class), 1 guard's van, 6 goods wagons and 112 empty slate wagons; the whole covering a length of 1,200 ft.

Both William Mason and the Baldwin Locomotive Works in



Truck Coupler for Meyer Engine.

forward almost to the front end of the latter. To the under side of this box is attached a phosphor bronze cap which fits upon the hemispherical top of an iron casting upon the frame of the forward truck near its center. Both this casting and the phosphor bronze cap are hollow and afford a passage way for the exhaust steam to reach the stack, the nozzles being located on top of the iron box in the smoke arch, and the flexibly connected exhaust pipes leading into the inner end of the casting on the truck. At the firebox end the boiler rests upon sliding plates which in turn move on two bearings of phosphor bronze, placed in suitable brackets on each side of the frame.

A hollow buffer is fastened centrally between the inner ends of the trucks and through this buffer passes a drawbar, attached at

one end to the rear truck by a rather unique device, and at the other to the front truck by a ring encircling the cast iron center bearing.

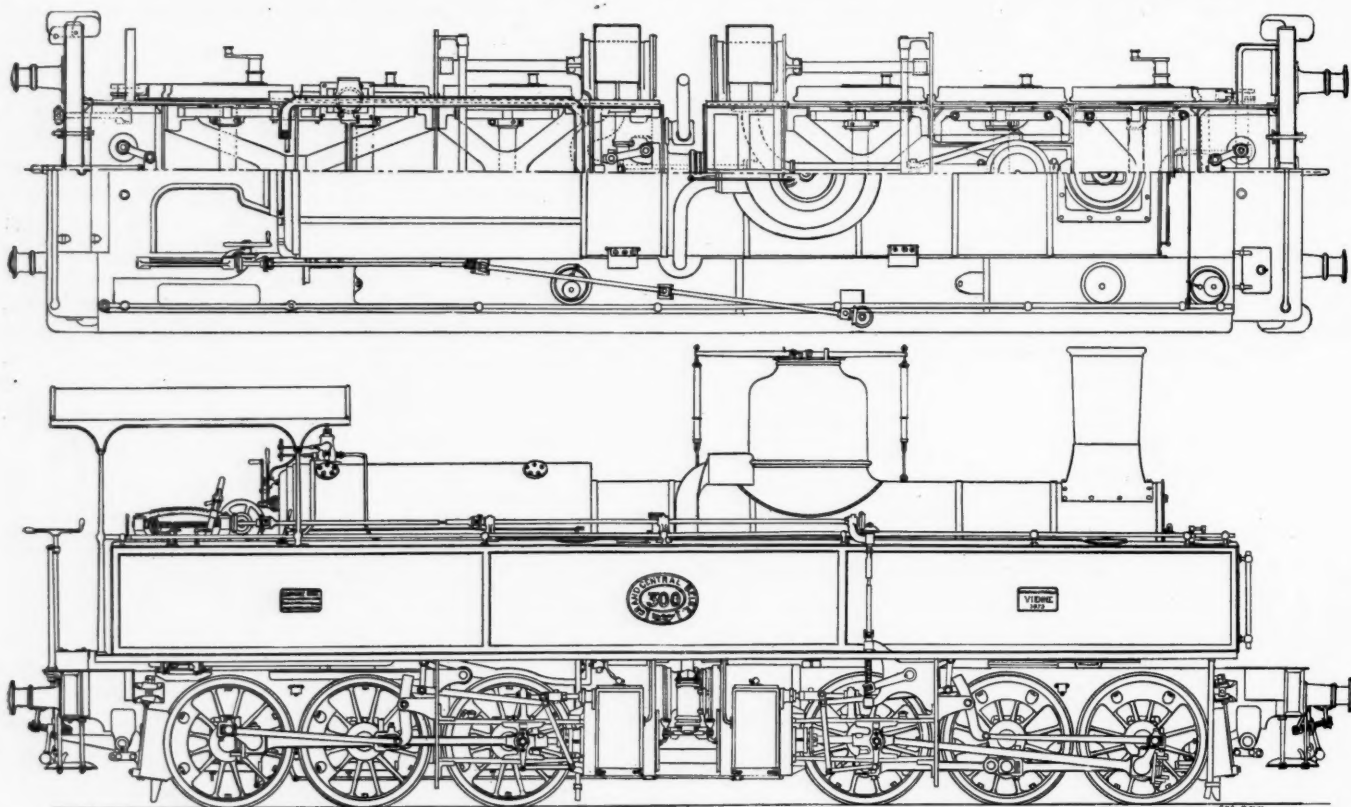
Two reversing apparatuses are used, one a lever and the other a screw. Two throttle valves with separate levers are also used, and both these and the reversing appliances can be operated together or independently, thus enabling only one or both trucks to use steam at the pleasure of the engineman. The brake of the rear truck is controlled by a hand screw, and that of the forward truck by a steam cylinder. The tanks and coal bunkers are bracketed to the sides of the boiler, although it is stated in *Engineering* that on "Avenir" they were fastened to the sides of the trucks.

About 1888 Anatole Mallet built the first of the type now so widely known as the Mallet articulated compound. It differs in many respects from those already described. The rear truck is connected rigidly to the boiler, the center lines of each coinciding; the forward truck does not swivel on center plates, but is coupled to the rear truck by a large pin passing through an extension of its frame at the rear which interlocks with the forward

greatly adding to the efficiency of the type by dividing the boiler and using the forward part as a feedwater heater; an arrangement which not only appears to be very successful in road service, but also enables single engines to be increased in efficiency by the addition of a forward truck with this improved extension of the boiler: thus converting them into Mallet compounds at a moderate cost.

Although the usual form of the Mallet compound is built with the cylinders of each truck at the forward end, a half tone in my possession shows one built a few years ago for the Northern Railway of France (du Nord) in which both sets of cylinders face as on the Meyer engine.

Some one has remarked that there is danger of the articulated engine being overdone in America. If this is the case it is unfortunate, as when the reaction sets in it might blind the eyes of railway men to the desirable features of the type. Perhaps the only indication of such a condition is in the design recently illustrated of a foreign development of the articulated engine in which the boiler is shown supported on huge longitudinal girders which are further extended at each end to receive water tanks



Articulated Locomotive (Meyer's System); Built for the Central Railway of Belgium in 1873.

transverse plates of the rigid truck, a unique system of transverse plates on the forward truck which enables it to both sustain the part of the boiler directly above it and at the same time permit the independent radial motion of the truck on curves; the use of high pressure steam in the cylinders of the rigid truck only where ordinary connections are used and the danger of leakage thereby eliminated; and the use of low pressure steam in the forward cylinders where flexible connections are used, thus enabling even these connections to be comparatively free from the leakage which is alleged to have given considerable trouble in the engines in which high pressure steam is used in both sets of cylinders. All connections are flexible.

According to a publication issued by the Baldwin Locomotive Works, "Record No. 65," page 20, it is stated that the first Mallet compound built in America was completed for the Baltimore & Ohio by the American Locomotive Co., in 1904, and that this engine has been followed by numerous others from the same company and from the Baldwin Locomotive Works.

The latter firm unquestionably is entitled to the credit of

and coal bunkers, and have the trucks located very close to the ends, one at each, the idea evidently being to use an unusually large boiler and deep firebox, yet keep both closer to the rail than is permissible on the usual articulated machine.

Standing beside one of the "Mallets" recently, and noting the various attachments with their numerous rods, pipes and fittings, I recalled an incident related several years ago in a railway journal regarding the Fairlie engine used on the Denver & Rio Grande. This story was to the effect that after the installation of that machine on the line, the only engineman successful with it was an Englishman. Coming under discipline, he was once suspended ten days, and being of a kindly disposition volunteered to show his substitute the details of the engine. After listening patiently for a time the latter blurted out, "Say, you take the engine and I'll take the ten days!"

The writer is again indebted for data and other assistance tending to confirm the accuracy of many of the statements in the foregoing paper, to the Baldwin Locomotive Works and J. Snowdon Bell, Esq.

TRANSPORTATION AND TRAFFIC IN SWITZERLAND.*

BY LOGAN G. M'PHERSON.

Although 70 per cent. of her area of 15,972 square miles is mountainous, and which all told is but half that of the state of Maine, Switzerland has maintained not only national independence, but a creditable position in industry and commerce.

The soil produces food only about sufficient for the needs of two-thirds of the population of about three and one-half millions. Yet although the country is obliged to import much of grain and of meat for its own consumption, it is a large exporter of certain foodstuffs, mainly the products of milk. With the exception of limestone, largely used for building, the mountains have little of the minerals or ores of economic importance, yet in the manufacture of metal goods Switzerland has a world wide fame which is shared by her weavings of silk and of cotton. The abundant water power that was long ago directly utilized now serves to generate electricity for which a wider field is hoped, even to the extent of the complete electrification of the railways. At this time, however, the factories are mainly dependent upon steam generated by coal, which must be imported from other countries.

Under these conditions it is evident that Switzerland cannot in competition with other nations produce the bulky and heavy manufactures. The efforts of her workmen must perforce be devoted to the fabrication of the lighter and more delicate articles to the value of which skill and excellence of workmanship contribute in the greatest degree and crude material in the least. Adapted to this economic necessity is the high intelligence and the patient perseverance of the Swiss people that have brought a skill in handiwork which has augmented through the generations, and an adaptability that quickly led to the deft utilization of the elaborate machinery devised for the watch-making, the cotton, silk and leather industries.

The compact of 1848 by which the cantons were welded into the Confederation gave to Switzerland the national character essential to industrial and commercial growth. Custom houses were abolished in the interior and established on the frontier. The nation was in a position to discuss propositions for material improvement and naturally the new means of transportation that had attained a forward development in other countries, was among the first subjects to be considered.

The history is clearly and instructively set forth by Placid Weissenbach, president of the General Direction of the Swiss United Railways. A commission appointed in 1850 submitted a scheme for a system of railways designed to supply the transportation needs of the republic. Discussions as to whether the lines should be built and operated by the state or by private companies were conducted by men of ability. Those who favored state ownership pointed out that railways were but streets of greater importance and therefore the nation should develop and maintain them; that the railways could only be developed to their full usefulness by being kept in the hands of the state; that inasmuch as the railways of the surrounding countries were principally state-owned and state-operated, it would be doubtful if the railways of Switzerland could properly protect their interests if they were not likewise controlled; that if the railways were left in private hands there would be conflict between their owners, who would seek individual profit, and the state whose aim would be to utilize them in the national interests; that private companies would seek to develop only those railways that promised commercial profit, to the neglect of the lines needed for the facility of the postal service and the military necessities of the government; that the owners of private railways could with their large staffs of officers and employees be formed into an organization that would be a state within the state, susceptible of use in opposition to the national welfare. On the other hand it was argued that the construction and operation of railways by private companies would be of a far higher degree of efficiency, as their interest would be in the direction of economy and efficiency; that in the light of previous

experience the activities of private companies could be regulated so that they would not conduce to injury; that it was beyond the province of the state to incur expenditure for other than the national defense; that the construction or subvention of railway lines would involve the state in obligations more extended than it ought to assume; that for the government to take shares in different companies would be to make it a factor in the stock market; and that subventions of the government to enterprises whose profit was not assured was inexpedient in practice and unsound in principle.

The latter views prevailed. The feeling against national control over the railways became so strong that by statute of June, 1852, the Confederation was divested of power to make concessions for railway building, this authority being left with the cantons. The law provided that the building of railways was to be under private enterprise which must obtain authorization from the cantons which must submit new projects to the Confederation, which was obliged to give its approval unless it was apparent that their carrying out would be to the disadvantage of the country from a military standpoint.

The first railway in Switzerland had been built by private capital to connect the eastern cantons by way of the Rhine valley with Basel, which had had rail communication with Germany since 1844.

Under the regime inaugurated by the law of 1852 there were constructed in the next ten years 716 miles of railway connecting one and another of the principal towns of Switzerland. It was with great difficulty that capital was obtained; the lines were completed only through pecuniary aid extended by the cantons and at great loss to the private investors. Notwithstanding this, additional lines were projected to meet the growing demand. The separate authority exercised by the different cantons over the railways within their respective limits rather early developed friction that debarred the adoption of a general policy for the movement of traffic. This cantonal disagreement was brought to a crisis in the discussion leading to the convention participated in by Germany, Italy and Switzerland for the building of the St. Gothard Tunnel. The law of 1852 had been drawn especially to define the relations between the private railway companies and the cantons. It did not particularly enter into the relations between the cantons and the Confederation in the control of railways. By 1869 a readjustment admittedly was necessary. To encourage the building of the railways the cantons had been liberal in extending privileges to the railway companies. As the lines were completed they came into antagonism with each other, and with the cantons, and their tariffs were the cause of public complaint. As in many cases one railway traversed two or more cantons, it was difficult to bring it under regulation.

After much discussion and not a little friction a new law was enacted on December 23, 1872, which put the general control of the larger transportation questions under the confederated government. It was no longer bound to consider only such concessions as came up to it through the cantons and to give its consent unless they seemed inimical to the military interests of the country, but it was empowered to pass upon concessions directly, the law especially enjoining that it promote means of communication with Italy and the Mediterranean. The law also provided penalties for derelict concessionaires, and for uniformity of construction and in methods of operation throughout the Confederation. The federated government was given absolute authority over tariffs, and provision was made for the settlement of disputes between the railways and the Confederation. It was definitely stated that while it was not the intention to deprive the cantons of adequate jurisdiction, the law was aimed at making the control of the railways national rather than cantonal. One reason for this had been the arbitrary attitude often assumed by the railway companies, and another the necessity for the maintenance of a national policy that would not deter investment in new and needed lines.

Concessions under the new law brought the length of the

*A preliminary report to the National Waterways Commission.

Swiss railways up to 1,653 miles in 1884. The capital expenditure to this time amounted to over \$176,000,000, the average exceeding \$100,000 per mile. The original concessions of many of the railway companies provided for the optional purchase by the government at the end of a specified period. Many of these periods terminated during the decade beginning with 1880. The Federal Council, after consideration beginning in 1883 of the governmental action that would be advisable, reported that the railways were capitalized too high and that they had paid larger dividends than ought to be allowed in the future, but stated that the financial condition of the Confederation was such as to prohibit any definite proposal to avail of the repurchase provisions of the concessions. The national assembly stood 67 votes to 59 in opposition to repurchase at that time.

The taking over the railways by the government had, however, been for many years, and continued to be an uppermost topic of public discussion. Those in favor argued that the railways of adjoining countries were passing into the hands of the state, the action of Germany being especially cited. They argued that if the Swiss government followed these precedents tariffs could be reduced for the benefit of commerce and that the profits of the lines would inure to the government instead of to the private companies, which were largely owned in foreign countries. The accumulation of public opinion in favor of government purchase led to the enactment in 1897 of a law authorizing such purchase and specifying the conditions under which it was to be effected. It was stated that the uniform operation of the lines was a desideratum, that if it were not undertaken by the government it likely would be sooner or later by a large shareholding company that would seek the greatest profit, whereas the government would operate the lines as highways for the benefit of the nation; that the centralized governmental administration would be more economical than that of the private companies; that tariffs could be reduced and made uniform; that the state would make use of the profits for the development of the lines and not in its general expenditure, therefore making expenditures for development that a private company would not be willing to incur.

The law provided that the government lines should be known as the "United Swiss Railways." It was desired that the administrative organization be made independent of political influence and yet that it be so closely connected with the government that there would be no danger of its becoming a state within a state, a body that might come into conflict with the government itself. The general control of matters of policy was placed in the Federal Council—the Bundesrath—and the direct administration of the railways under the control of a General Direction and an Administrative Council. Under these are the district directors for each of the five districts in which the lines were divided, under whom are district railway councils. The Administrative Council scrutinizes the accounts, examines the annual statements and confirms the draft of the railway budget. It has charge of the tariffs and classifications, approves the general plan of train schedules, adjusts the relations with other lines, including those of foreign countries; regulates competitive traffic and has ultimate decision in regard to construction and additions whether of plant or equipment. The general direction has charge of the employees and the actual operation, preparing plans for submission to the Administrative Council.

Pursuant to this law lines have been purchased by the government, aggregating 1,825 miles, on December 31, 1909, leaving 973 miles outstanding in the hands of private companies.

As the various railways were taken over by the government their concessions expired, leaving them without authorized tariff schedules. By way of providing for the promised uniformity of charges, the government under date of June 27, 1901, enacted a tariff to apply on all lines of the Swiss United Railway. A draft of this tariff had been sent by the Railway Council to the Swiss Commerce and Industry Association, the Swiss Trade Association, the Swiss Peasants' Union and the Swiss Railway Union for their comments and recommendations, which these bodies promptly forwarded in detail.

The short distances traversed by the Swiss railways have rendered unnecessary any elaborate classification of freight and have not developed the necessity for a tapering tariff. The earliest tariffs were based upon the weight and the space occupied by goods. Modifications were subsequently made according to the value of the commodities. Different railways adopted different schedules and dissatisfaction was thus created which led to a reform of the tariffs by the government in 1882. The general framework then adopted was retained in the act of June 27, 1901. There is the quick service of piecegoods, i.e., package freight, for which a double charge is made; two classes of piecegoods at ordinary speed, one class for wagon-loads of five tons, another for wagon-loads of ten tons, and three special tariffs applied to wagon-loads of various specified commodities. Each tariff provides for a terminal charge which is graded and for a transportation charge which is at a fixed rate per kilometer. These tariffs are subject to increase on the lines ascending mountains and especial tolls are levied for transport over bridges and through tunnels. Reductions may be made on bulk goods in transit traffic, i.e., traffic that crosses Switzerland on its way from one country to another.

While retaining this framework of the freight schedules the law of June 27, 1901, adopted the lowest rates that had been in effect on any road to apply over the entire state system. It made a similar adjustment of passenger rates, adopting the lowest schedule in effect to apply generally. It retained the provision for three classes of passengers, stipulating that on fast express trains provision for third class passengers, and if necessary for second class, might be dispensed with; that provision for the three classes of passengers must be made on ordinary express trains, but that on local trains need be provision for third class only. It was specified that at least three trains a day should be run in each direction over the entire length of each line, stopping at every station, and that additional accommodation should be provided when necessary.

A charge is made for all baggage except that carried by hand and not exceeding 22 lbs. in weight. Commercial products or utensils for the use of the passenger are carried free up to the weight of 55 lbs. This is evidently a concession to the poorer people, and to the workmen who carry products made in their homes to the place of sale. It was estimated that these reductions in the rates on both passenger and freight traffic would find more than compensation in the increase of traffic. The results of the first year or two seemed to carry out this supposition, but later the net revenues have fallen off.

Under the state control salaries of the administrative officers have been reduced, with the result that some of the ablest men have left the railway service to be succeeded by fonctionnaires of inadequate experience and ability, who regard their positions as governmental offices. The wages of the rank and file of the service have been increased, and the increase in the train service has added greatly to the expenditures. The result of this policy is evidenced by the fact that for the year 1908 the account of the United Swiss Railways shows an excess of expenditure over income of \$1,080,000, in the expenses being included the interest upon the capital and the amortization which the repurchase law specifies shall be completed in 60 years.

The General Direction of the United Swiss Railways states that this condition is largely due to the economic depression. It admits, however, that rates in some cases have been unduly lowered and says that their increase is contemplated. It also admits that the increases in the wages of employees and the extension of the train service have been factors in bringing about the deficit. In ten years railways that under corporate operation were fairly profitable and prosperous have under the control of the state become a drain upon the taxpayers. This has happened in a country so small that there is little or no contention and rivalry between one region and another; where because of their high intelligence and patriotism, the inhabitants have maintained a political organization that long has been cited as a model of government by the people for the people.

General News Section.

The Pere Marquette Railroad is to install telephones for train despatching on its Toledo division.

According to an Indianapolis paper the Evansville & Terre Haute has "let out" all of its passenger conductors with one exception. The officers have declined to give any reason for the act and the conductors are equally reticent.

Dr. Arthur T. Hadley, president of Yale University and chairman of the commission appointed by President Taft to investigate the subject of the regulation by federal law of the issue of railway stocks and bonds, has gone to Europe, where he will make some study of the subject.

At Avondale, La., on the night of September 26, four masked men robbed a mail car of the Southern Pacific. This car was one of three belonging to a train which had just been brought across the Mississippi river on a ferry boat. It is said that the robbers overlooked packages containing \$125,000.

In a dispute between the Denver & Rio Grande and its firemen concerning wages, Chairman Knapp, of the Interstate Commerce Commission, has been asked to name the third member of a Board of Arbitration to which it has been agreed to refer the matter. Mr. Knapp's coadjutor on the Mediation Board, Dr. Neill, is now in Europe.

Officers of the Pennsylvania Railroad are reported as saying that the station agents at many of the more important stations of the road will receive an increase of pay. These agents, with all other employees, received an increase of 6 per cent. last spring. Since then the conductors and trainmen and some other classes have received an additional increase.

Commencing October 2 the passenger trains of the Charlotte Harbor & Northern will run through between Boca Grande, Fla., and Tampa, using the tracks of the Seaboard Air Line between Bradley Junction and Tampa. The northbound train leaves Boca Grande 6.15 a.m. and Arcadia 8.20, arriving at Tampa at noon; the southbound leaves Tampa at 4 p.m.

To-day—September 30—is "rice day" in the southwest. The Southern Pacific and other railways are observing the day by serving rice in various ways and calling attention by their menu cards to its excellence as a food. The question of granting reduced rates to bridal couples because of the encouragement of the rice industry which they foster has not yet been taken up.

The Western Pacific is running fast trains for fruit from Stockton, Cal., destined to Chicago and New York. Delivery will be made in Chicago in seven days and in New York in nine or ten days. Arrangements have also been made by the Western Pacific for a coast-to-coast through package merchandise car over the Lackawanna, the Wabash, the Missouri Pacific and the Denver & Rio Grande.

Cincinnati papers say that a number of railways in Ohio are going to establish a state bureau for supervising demurrage matters. The purpose seems to be to have an advisory committee, or board, similar to that which was organized last year in Michigan, which will keep fully posted concerning the action of the roads in this matter, offering criticisms where necessary, yet having no administrative authority. It is said that all of the demurrage bureaus doing business in Ohio will soon be discontinued.

A meeting of shippers, members of railway commissions and public men was held at Topeka, Kan., on September 22 to formulate plans for opposing advances in freight rates. It was called by W. R. Stubbs, Governor of Kansas, who was one of the principal speakers. Resolutions were adopted demanding a physical valuation of railways to determine if railway earnings are too high, and the prosecution of the railways for alleged violation of the Sherman law by entering into agreements to raise their rates. A committee was appointed to wait on President Taft with a copy of the resolutions.

The Louisville & Nashville has ordered a complete equip-

ment of Western electric selectors and telephones for train despatching on the Cumberland Valley and Kentucky divisions, from Cincinnati to Norton, 304 miles. There will be six circuits, four train wires and two message circuits with a total of 162 stations. The message wire circuits to be used for general railway business extend from Paris to Cincinnati, from Cincinnati to Corbin, and from Corbin to Norton. The Louisville & Nashville already has Western Electric train despatching equipment between New Orleans and Mobile, 140 miles.

According to Boston papers, ex-President Tuttle, of the Boston & Maine, will have a "vacation salary" of \$50,000 for one year; which means, we suppose, that his regular salary will be continued for that length of time after his retirement; and, further, it is said that afterwards he will have \$10,000 a year for an indefinite period. A Massachusetts paper, commenting on this report and assuming that the new president will get the same salary as the retiring one, observes that perhaps the proper thing for the Boston & Maine to do with its freight rates would be to reduce them instead of advancing them.

The United States district attorney at Chicago has brought suit against the Chicago & Alton for alleged violations of the hours of service act prohibiting any railway from working any trainman for more than 16 consecutive hours. The government charges two specific violations of the act. The declaration alleges that the employees in question left Bloomington on a freight train at 5:30 a.m. on July 6 and were not relieved until they arrived at Joliet at 9:50 p.m. on the same day, and that they left Bloomington at 5:30 a.m. on July 25 and were not relieved until they arrived at Joliet at 10 p.m. on the same day.

The business interests of many Texas cities are said to be greatly aroused over the action of the legislature at its recent special session in passing the "International & Great Northern bill," and the next legislature, which meets in January, will be asked to repeal the obnoxious measure. It is claimed that its enactment has caused the abandonment of a number of railway projects. Many towns—Abilene, Seymour, Dublin, Breckenridge, Graham, Stamford, Quanah, Dalhart, Lubbock, Wichita Falls and others—are putting considerable money into new railways, and they fear that they will lose their money already invested in surveys, rights of way, etc. The West Texas Commercial Congress will discuss the subject at its next meeting in October.

Chief Engineer Kittredge, of the New York Central, who appeared before the Public Service Commission of New York at Albany last week in opposition to the application of the Buffalo, Rochester & Eastern for a certificate of necessity, said that the New York Central contemplated making improvements and additions to its property which would give it a six-track railway from Buffalo to Albany; and he gave items from a list of contemplated expenditures as follows: \$18,000,000 for Buffalo; in Rochester \$2,000,000 was being spent and \$1,400,000 contemplated; Syracuse improvements, \$6,000,000; Rome, \$2,000,000; Utica, \$3,000,000, and between Utica and Albany, \$1,096,000.

F. B. Freeman, chief engineer of the Boston & Albany, testified that since 1907 that road had spent \$14,000,000 on improvements and had added 77 miles of tracks. The company can now handle 1,800 freight cars a day each way. The company has received no complaints of delay in the delivery of freight for some time.

Mr. B. F. Looney, who, we suppose, is a member of the Texas legislature, writing to the *Dallas News*, in defense of the recent action of the legislature in passing the law to compel the new owners of the International & Great Northern to agree to settle damage claims pending against the company to the amount of over \$2,000,000, says that "Mr. Freeman, the receiver, expended for betterments and paid interest to eastern bondholders out of the current earnings of this road \$3,500,000, instead of paying the claims of Texas creditors for current expenses that accrued for a year and over preceding the receivership, aggregating \$2,250,000, thus diverting from its proper channel the current earnings of said company and violating the rule of equity announced by Chief Justice Waite in *Burnham v. Bowen* (11

U. S. 783)." Mr. Looney further explains, in answer to a charge that the bill was purposely framed so as not to aid George Gould in collecting a claim of \$5,000,000 which he holds against the road, that this claim is for money advanced over five years ago in connection with the extension of the road to Fort Worth. Not being a liability for current expenses incident to the operation of the road, it does not come within the rule which has been laid down by the courts of equity for the settlement of the status of claims against railways which are not in liquidation.

The Pennsylvania Railroad's premiums to trackmen, for 1910, six in number, were distributed last week at Harrisburg at the close of the first day of the general manager's 38th annual track inspection, on which the general manager was accompanied by his entire staff of officers, including some 350 men in the operating department. The special main line committee this year consisted of Joseph T. Richards, L. R. Zollinger, H. A. Jaggard, J. B. Baker and E. B. John. Their awards were as follows: First premium, \$1,200 (of which \$800 goes to the supervisor and \$400 to the assistant supervisor) for the best line and surface between Jersey City and Pittsburgh and Philadelphia and Washington, was awarded to Supervisor George Goldie, Jr., and Assistant Supervisor R. R. Nace, who have charge of the track from 62d street, West Philadelphia, to Wilmington. The four premiums of \$800 each (\$600 to the supervisor and \$200 to the assistant for the best line and surface on a main line superintendent's division) were awarded as follows: W. F. Rench and S. L. Church, West Philadelphia to Tullytown; G. R. Sinnickson and H. A. Gass, West Philadelphia, to Coatesville; J. A. Burchenal and E. C. Silvius, Durward to Longfellow, Pa.; F. L. Pitcher and W. W. Hubley, New Florence to George, on the Pittsburgh division. The improvement premium of \$1,000 (\$700 to the supervisor and \$300 to the assistant) for the greatest improvement in line and surface was awarded to H. E. Waters and Frederick Evans, Baltimore to Springfield, Md.

President Ripley on 10 Years' Increase in Railway Capitalization and Investment.

President Ripley, of the Santa Fe, has given out an interesting statement in reply to an assertion of United States Senator Cummins, of Iowa, that the railways of the United States increased their capitalization \$3,500,000,000 in 10 years without making any equivalent increase in the investment in their properties.

"The implication, of course, is," says Mr. Ripley, "that it was a voluntary increase in capitalization with no consideration whatever. While I have not been able to identify the particular 10 years the senator had in mind, it undoubtedly is true that between 1898 and 1908 the railroads of the country added more than \$3,500,000,000 to their capitalization, and it is as surely untrue that this was done without the investment of independent capital.

"In the 10 years, 1898 to 1908, the nominal capital of the railways increased from \$10,818,554,031 to \$16,767,544,031 or \$5,948,990,796. Of this increase no less than \$3,964,046,794 was in funded debt, and only \$1,984,944,002 was in stock. Of these increases at least \$1,630,000,000 stock and \$782,000,000 funded debt is in the treasuries of the railways, leaving an approximate increase of \$3,182,000,000 funded debt and \$355,000,000 stock, a total of \$3,537,000,000 in the hands of the public.

"This is in substantial agreement with the reports of the Interstate Commerce Commission, which show that \$12,833,591,510 was the net capitalization of the railways in 1908, against \$9,297,168,000 in 1898, an increase of \$3,536,423,000 in 10 years. The significant feature of this increase is that 90 per cent. was in funded debt, in other words, borrowed money, which is independent capital.

"Now, what have the railways added to their property during these 10 years to balance this invested capital? To begin with, they have added 45,124 miles of line and 88,312 miles of all track to their fixed irrecoverable investment. Senator Cummins has put a value of \$20,000,000,000, or over \$60,000 per mile of track, on all railway property. Its net capitalization is over \$38,000 per mile of track. Deducting \$8,000 per mile to cover the cost of equipment, etc., and multiplying 88,312 miles of track by \$30,000, accounts for \$2,649,360,000 of this independent capital invested.

"The railways had 21,464 more locomotives in 1908 than in 1898, costing on an average over \$20,000 apiece and so representing a capital investment of over \$429,280,000 in 10 years. But this takes no account of the average increase of 20 tons in the 36,234 locomotives of 1898. As each ton would cost at least \$200, the 36,234 locomotives representing those of 1898 now represent an added investment of approximately \$145,000,000.

"The number of passenger cars has increased from 33,595 in 1898 to 45,292 in 1908. The increase of 11,597 at \$8,000 per car, represents an added investment of \$92,776,000 in 10 years.

"Between 1898 and 1908 the number of freight cars increased from 1,248,826 to 2,100,784, or 851,958, representing at the reasonable average of \$1,000 an additional investment of \$851,958,000. Moreover, so great has been the advance in the capacity of cars that it has added an average of 10 tons to the cars of 1898, and \$30 per ton is a conservative estimate of the value of this increase, representing an added investment of \$374,647,000 in this incidental line alone.

"Between 1898 and 1908 there has been an increase of 54,528 in the number of cars in company service, such as cars for work trains, etc., representing at \$500 apiece, an added investment of \$27,264,000.

"Reballasting, rebridging and realigning 245,333 miles of track of 1898 at \$500 per mile represent \$122,666,000 of added investment.

"Besides these definite expenditures, track elevation and the elimination of grade crossings have cost at least \$200,000,000 added capital expenditure; new stations \$200,000,000, and addition to terminal property \$200,000,000, to say nothing of the millions expended in replacing 50 to 70 pound rails on 245,333 miles of track with 75 to 100 pound rails.

"Independent capital provided for \$3,537,000 of this addition to railway property and the balance of \$1,625,000,000 was included in operating expenses, or came out of surplus earnings, which under the British system would have been divided among the stockholders."

A Railway's Gift to the Farmers.

On January 1 the Duluth & Iron Range will voluntarily mail to the treasurer of St. Louis county a check for the taxes on 457,426 acres of land and all the timber on it, ignoring the fact that both lands and timber are exempt from taxation under the gross earnings law.

The act will be the result of an agreement between County Auditor Halden and the officers of the road, which has been under consideration for fully a year past, and it will be one of the most public-spirited and generous steps ever taken by a corporation. As a result of the agreement, the road voluntarily places on the tax rolls of St. Louis county nearly 500,000 acres of land and millions of feet of timber on which, under the law, no effort could or would be made to collect taxes.

The gross earnings law of Minnesota provides that railways shall pay a tax of 4 per cent. of their gross earnings to the state treasury and that this sum shall be in lieu of all other taxes and assessments.

Some years ago an attempt was made to tax lands held by railways under grants from the federal and state governments, under what was known as the Anderson law. Prior to the organization of the steel corporation the railways carried that law to the supreme court of the United States, where it was held that the gross earnings tax was in lieu of all other taxation, that it covered lands held under federal and state grants, and therefore no other taxes could be assessed against any such property.

Submission to taxation is therefore purely voluntary, and a recognition of the fact that unless its lands pay their share of the cost of development, while they are awaiting settlement, they are an impediment to such development. Railway property is exempt even from street assessments. Repeated efforts have been made to have gross earnings taxes apportioned to the districts from which it is collected, but without avail, and Duluth, probably more than any other city in the state, feels the effect of this law. With at least \$3,000,000 worth of railway property in the city limits, the problem has many times been a most pressing one.

At times efforts have been made to have the railways agree to pay local assessments, and Duluth secured such an agreement from the Wisconsin Central before it was granted a franchise to

enter the city. But such agreements have been signed under a club, as it were.

The concession is the more remarkable, owing to the class of people it will benefit. It will not be the big shippers, nor will it be the wealthy or influential citizens of Duluth, but the poor settler who is working to get the wild but productive land of northern Minnesota under a plow; the man to whom ready money is a rare sight and to whom taxes are an unusual terror; the pockets of the pioneers in the great north country.

The credit for securing this action lies between County Auditor Halden and the officers of the United States Steel Corporation. * * * In the town of Lavelle, last year's tax rate was \$9.90 per \$1,000. With the Iron Range lands added to the tax rolls to share the burden this tax rate would be reduced to \$5.84 per \$1,000. In the town of Cotton, last year's rate of \$12 per \$1,000 would be cut to \$8.22 per \$1,000. Other cases show similar benefits.—*Duluth Herald*.

Wrecks in Kansas and Indiana.

In a wreck due to a washout on the Chicago, Rock Island & Pacific at Clayton, Kan., on the morning of September 23, 16 persons, the majority of them passengers, were killed and 13 injured. The locomotive and the mail car of the train ran, without warning, into a flood 20 feet deep, which had been formed by a cloudburst. A fill 1,000 feet long had been badly washed. Parts of the wreck, in which were some of the passengers, were carried off some distance by the raging stream, and the passengers were drowned. The conductor, the engineman, the fireman and one brakeman were among the killed.

Near Tipton, Ind., last Saturday a butting collision of electric cars on the Indiana Union Traction line killed three passengers and a motorman and injured a half dozen other passengers. The passenger car, northbound, carried 30 or 40 passengers, but the southbound car was a freight. Every passenger in the smoking compartment of the passenger car was killed. The southbound car had run past the proper meeting place.

This collision occurred almost exactly three days after the similar disaster near Bluffton, about 50 miles away, where 40 persons were killed.

Rapid Transit in New York.

The New York State Public Service Commission, First district, is to give hearings this week on a proposal to open for traffic the Steinway tunnel, otherwise known as the Belmont tunnel, under the East river from 42d street, Manhattan, to Long Island, and it is said that the Interborough Rapid Transit Company, which controls the ownership of the tunnel, is now ready to turn it over to the city, provided it can have a satisfactory contract for operating it, and provided, also, that the city will allow it (the Interborough) to build an additional main track throughout the length of the Second avenue and Third avenue elevated railways in Manhattan, thus making those lines three-track. The proposals also include tentative plans for the following routes:

Two-track elevated route from the 143d street station of the Third avenue elevated throughout private property—Willis avenue and Bergen avenue to a connection with the Westchester avenue line of the rapid transit railroad now operated by the Interborough.

Three-track elevated route from Third avenue and Pelham avenue through Pelham avenue to Webster avenue, along Webster avenue to Gun Hill road, through Gun Hill road to White Plains road.

Two-track elevated route from Eighth avenue and 149th street through McComb's Dam lane to Central avenue bridge, over Central avenue bridge and its approach to 162d street, through 162d street to River avenue.

An elevated route through Second avenue and 59th street to Queensboro bridge.

The city has hitherto opposed the construction of additional elevated tracks but now it is reported that the Public Service Commission looks upon the proposal with favor. Mr. Wilcox, chairman of the commission, says that the Interborough proposes a fair exchange. "If there were no elevated lines in the city," said he, "I do not think I would be in favor of building one. But that is not the question. Here we already have our elevated lines, and our traffic conditions are deplorable. It would

be better to make these elevated lines as efficient as possible, as long as they are in existence. The third track proposed by the Interborough would, I am told, increase the carrying capacity of the lines 30 per cent. In the Bronx, the result, so far as darkening the streets is concerned, will be the same, whether we extend our subways or our elevated roads, for our subways are elevated in the Bronx. Something must be done to better transportation facilities in New York, and the addition of a third track on the elevated roads will undoubtedly do much to solve the problem."

Mr. Hedley, general manager of the Interborough, says that the construction of a connecting link between the Steinway tunnel and the present subway at 42d street and Vanderbilt avenue would cost \$1,500,000. The Steinway tube, he says, has cost the Interborough \$9,000,000. It was finished over two years ago and has remained unused because of disagreement about the franchise.

World's Coal Production and Consumption.

The production of coal in the five principal coal-producing countries of the world in 1908 and 1909 was as follows:

	Tons.*	
	1908.	1909.
United Kingdom	261,529,000	263,774,000
Germany	145,298,000	146,507,000
France	36,044,000	†36,654,000
Belgium	23,179,000	†23,182,000
United States of America.‡.....	371,288,000	†390,336,000

*Tons of 2,240 lbs. †Provisional figures. ‡Including lignite.

In Germany and in France the production of coal increased throughout the period covered by this table, and was in 1909 greater than in any previous year. In the United Kingdom, Belgium and the United States the production in 1909 though greater than in 1908 fell short of that of the year 1907. The excess of the output of 1909 over that of 1908 was, in all cases, with the exception of the United States, small. The aggregate output in 1909 of the five countries named was 860,000,000 tons, or an increase of 23,000,000 tons on the output of 1908, but less by 36,000,000 tons that of 1907. Of the remaining countries included in the tables, Russia alone has a production exceeding 20,000,000 tons.

The total known coal production of the world (exclusive of brown coal or lignite) in 1908 was about 950 million tons, of which the United Kingdom produced more than one-fourth.

The consumption of coal in some of the chief consuming countries is shown in the following statement:

	Tons.	
	1908.	1909.
United States	360,935,000	*379,059,000
United Kingdom	176,228,000	177,745,000
Germany	129,845,000	129,738,000
France	52,995,000	*54,327,000
Russia	*28,808,000	Not yet
Austria-Hungary	25,028,000	available
Belgium	22,515,000	*22,455,000

*Provisional figures.

The consumption of coal per head of population in the countries included in the preceding table is shown in the following statement, which applies to 1908:

United Kingdom, 3.96 tons; United States, 4.14 tons; Belgium, 2.11 tons; Germany, 2.05 tons; France, 1.35 tons; Austria-Hungary, 0.51 tons; Russia, 0.19 tons (provisional figure).—*Journal of Commerce*.

To Guard Against Loose Wheels.

The derailment of a passenger train at Stoa's Nest, England, on the London, Brighton & South Coast, January 29, which killed five passengers in the train and two persons standing on the platform, was reported in the *Railway Age Gazette* of February 4, 1910, page 267. The Board of Trade report, signed by Lieut. Col. von Donop, which has just come to hand, says that the cause of the derailment was a loose wheel. The evidence that this was the cause seems quite conclusive. The train was running about 45 miles an hour. Col. von Donop finds in the board's records only two previous cases of this kind; one in 1895 and one in 1898, both on the Great Western. In the earlier case, the axle had been turned a trifle too small, and in the other one the wheel was not sufficiently tight. After those accidents, the Great Western adopted the practice of making a back test pressure of 50 tons on all wheels passing

through the shops, and since that action has had only one case of a wheel shifting on its axle. In that case the cause was a hot box. Also, since 1898 the Great Western has used an apparatus which automatically marks on a tape the pressure required during the whole operation of pressing a wheel over its seat. Similar precautions are now being taken by the Brighton road. All the wheels of its main line trains have been especially gaged. As far as Col. von Donop can learn, no other railway in England makes these careful tests, and, therefore, he calls the attention of all of them to the action of these two companies.

Economy in Transportation.

America's pre-eminence in all of the arts which annihilate time and space, and which thus add to the wealth of the world and the happiness of mankind, is pretty well known already; but every now and then the facility with which we make use of our varied resources is illustrated in new ways, and our self-congratulations must be repeated. The latest instance is the following from the *Telegraph and Telephone Age*:

"Probably the smallest sum of money ever sent by telegraph was forwarded recently by a New York stock broker to Seattle. Having been advised by the postmaster that there was an unstamped letter addressed to him in the Seattle office, he immediately sent by wire the two cents necessary to have the letter forwarded. The letter when received was found to contain a good order, together with a check, so he was well repaid for the extra expense involved in getting the letter."

The Railway Appliances Association.

John N. Reynolds, secretary and treasurer, 303 Dearborn street, Chicago, in the course of his preparation for the exhibition of railway appliances used in the construction and maintenance of steam and electric railways to be held at the Coliseum, March 20 to 25, inclusive, 1911, is mailing space application blanks to prospective exhibitors. This exhibition is to be held in connection with the annual meeting of the American Railway Engineering & Maintenance of Way Association.

The circular contains general information useful to exhibitors in making application for floor space, etc. The price of space will be 40 cents per sq. ft. on the main floor and 25 cents per sq. ft. on the balcony. This balcony is an addition to the space previously available. The membership fee will be \$25 for each firm, which fee will include three badges.

Application for space, to be considered in the first allotment, must be filed in the office of the secretary not later than November 1; and those applications filed after that date will not be considered until all previous applicants have been served. The first allotment of space will be to those who exhibited at both previous exhibitions held at the Coliseum.

The exhibition will be opened to the public on Monday, March 20, at 1 p.m. and each and every day thereafter at 8 a.m. and will close every evening at 10 p.m.

Railway Employees' Meeting in New York City.

A meeting of members of the four principal railway brotherhoods, the enginemen, firemen, conductors and brakemen, which was held in New York City on Sunday last, was attended by about 3,000 members, who, according to the resolutions adopted, were from the Erie, Lackawanna, Long Island, Reading, New Jersey Central, Lehigh Valley, Central New England, Central Vermont, New York, New Haven & Hartford, New York, Ontario & Western, Pennsylvania Railroad, Boston & Maine, Boston & Albany, Delaware & Hudson, New York Central, Buffalo & Susquehanna "and all other railway lines in the eastern territory."

Declaring that the organizations propose to continue to insist on higher wages, more favorable working conditions, shorter hours and adequate compensation for members injured or killed and also declaring that "the 2,000,000 voters directly dependent on the railway interests of this country for a livelihood ask for nothing short of a square deal," the meeting adopted resolutions as follows:

RESOLVED, That we exert our collective and individual efforts against those who are selfishly or otherwise antagonistic to the interests from which we derive our livelihoods.

We, as employees, fully realize that as a practical proposition—theories

laid aside—the earnings of railways must be sufficient to pay all charges and expenses with a substantial and assured margin of profit in order that the conditions may continue to improve; that the safety and convenience of the public may be conserved and protected, and that necessary extensions may be made to keep pace with the growth of our common country. We further recognize that our welfare, as employees of the railways of the United States, is dependent upon the prosperity of the employing company, and that the investor has the right to protection and consideration as well as the employee

RESOLVED, That we earnestly request the Interstate Commerce Commission to consider the proposed increases in the transportation rates of our employers in a broad-minded manner, and from the standpoint of their general knowledge of railway conditions as they exist; that technicalities and impractical theories may not be allowed to override well known facts; and that such disposition may be made of the matter as will foster and encourage the efficiency of the service, the welfare of the rank and file, and the maintenance of standards best calculated to enhance the development of the properties. . . .

It is said that the employees of the Pennsylvania Railroad, many of whom were present, had had an interview with the general manager of that road, Mr. Myers, and that their action was in compliance with a request from him. According to a Philadelphia paper:

"Mr. Myers asked the employees whether they would support the company's stand on the freight rate question if they thought the management was right. He was assured that the indorsement would be given. Mr. Myers confers regularly with representatives of the employees, but other conferences have been held at which the rank and file have been present. In every instance the general manager has qualified his suggestion that the men indorse the company with these words, 'If you think we are right.'"

Association of Railway Electrical Engineers.

The third annual convention of the Association of Railway Electrical Engineers was held in Chicago at the La Salle hotel September 27-30. Reports were received from the various committees appointed to consider the subjects of illuminating standards; specifications; train-lighting practice, and accounts and reports. J. G. Heninger presented a paper on the illuminometer in railway practice; B. A. Stowe a paper on ventilation of railway cars, and S. F. Nichols one on electrical operation of drawbridges. On Monday evening there was an informal dance and reception. On Tuesday there were automobile trips, and on Wednesday a matinee party. The banquet was on Thursday.

In connection with the convention, the following firms exhibited and were represented:

- Adams & Westlake Company, Chicago.—Represented by R. M. Newbold.
- American Pulley Company, Philadelphia, Pa.—Axle pulleys and bushings for car lighting. Represented by C. E. Brinley.
- Automatic Annunciator Company, Chicago.—Automatic annunciator in operation. Represented by H. Kiper, Percy P. Hinckley, Lewis Cole, J. J. Comer.
- Baird Electric Company, Chicago.—Railway train despatching telephone system for steam and electric railways in practical operation. Represented by E. P. Baird and A. E. Case.
- Benjamin Electric Manufacturing Company, Chicago.—Electric lighting specialties and fixtures. Represented by H. E. Watson, Knott.
- Central Electric Company, Chicago.—Okonito wires, cables and cords and tapes; Columbia lamps, carbon gem, tautulum and magda; Diehl fans, wall, oscillating and exhaust; Diehl fuses, cut-outs and boxes. Represented by J. M. Lorenz, Dan Woodhead, G. M. Cox, J. G. Boyd, C. D. Oldham, L. G. Martin.
- Commercial Acetylene Company, New York.—Represented by H. C. Horan.
- Consolidated Railway Electric Lighting & Equipment Company, New York.—Represented by L. J. Kennedy, T. L. Mount.
- Crouse-Hinds Company, Chicago.—Condulets, knife switches, headlights, panel boards and morbitt porcelain. Represented by F. F. Skeel, A. C. Dubs Key, George A. Gray, Marian S. Keel.
- Dick, R. & J., Ltd.
- Edison Storage Battery Company, New York.—Storage batteries for car lighting. Represented by H. G. Thompson.
- Electric Storage Battery, Philadelphia, Pa.—Storage batteries for car lighting. Represented by G. H. Atkins, H. E. Hunt, T. A. Cressey, R. I. Baird, J. N. Rosholt, P. G. Downton.
- General Electric Company, Schenectady, N. Y.—Train lighting, incandescent lamps. Represented by E. M. Hawley, Henry Schroeder.
- Gould Storage Battery Company, New York.—Generator regulator, lamp regulator, model new pole changer, storage batteries and equipment in operation. Represented by G. G. Milne, Bouche, Jepson, George Beyer, W. M. Lawlor, G. R. Berger and Charles Krech.

Jandus Electric Company, Cleveland, Ohio.—Railway fans and car ventilating apparatus. Represented by B. A. Stowe, C. W. Beach, W. E. Daniels, W. L. Cuminsky.

Kerite Insulated Wire & Cable Company, New York.—Samples of Kerite insulated wires and cables, also specimens of pure up-river fine dry Para rubber. Represented by P. W. Miller and J. R. Renton.

Luitweiler Pumping Engine Company, Rochester, N. Y.—Models of pumping engines. Represented by E. V. Williams.

National Electric Lamp Association, Cleveland, Ohio.

New York Leather Belting Company, New York.—Represented by J. L. Abt, W. H. Glatt.

Nungesser Electric Storage Battery Company, Cleveland, Ohio.—Dry cells, batteries, Acme rapid-fire batteries, carbon brushes and specialties. Represented by Warner Jones and H. S. Greene.

Oneida Steel Pulley Company, Oneida, N. Y.—Sample of steel pulleys for car lifting devices, Oneida corrugated split-taper steel bushing. Represented by N. G. Stark, and H. B. Gale.

Pyle-National Electric Headlight Company, Chicago.—Ball-bearing lock, electric headlight equipment and Ross special headlight case. Represented by J. Will Johnson and John E. Kilke.

L. N. Pyle—National Electric Lamp Association, Cleveland, Ohio.—Complete line of Mazda multiple train lighting and street series lamps; mazdium drawn wire lamps and tantalums of all types. Represented by C. W. Bender, J. L. Heninger, H. J. Raymond and S. J. Banks.

Safety Car Heating & Lighting Company, New York.—Axle lighting apparatus and lamps for car illuminations. Represented by A. C. Moore, J. G. Van Winkle, George E. Huber and H. H. Halen.

Tipless Lamp Company, New York.—Tipless car lighting lamps. Represented by Ray P. Lee, and R. S. Carrick.

United States Light & Heating Company, New York.—Train lighting material and storage batteries. Represented by W. P. Hawley, L. S. Cunney, C. E. Mead and J. E. Sinclair.

Watson Insulating Wire Company, Chicago.—Represented by W. D. Dunsmore, R. A. Patterson, B. L. Winchell, Jr.

Western Electric Company, Chicago.—Train lighting lamps of the mazda, tautatum and carbon types; mazda lamps from 16 to 500 watts; Western Electric interphone railway shop and office type; Hawthorne magdallier fixtures. Represented by G. H. Porter and George Loundsberry.

Westinghouse Electric & Manufacturing Company, Pittsburgh, Pa.—Tungsten and metalized car lighting lamps. Represented by B. F. Fisher, Jr.; J. M. Schilling and A. N. Brown.

Willard Storage Battery Company, Cleveland, Ohio.—Willard standard train lighting battery. Represented by T. A. Willard, R. Norberg, W. E. Ballantine and L. Sears.

American Railway Bridge and Building Association.

C. A. Lichty, the secretary of this association, has just issued the program for the 20th annual convention to be held at the Albany hotel, Denver, Colo., October 18 to 20, inclusive. Committees will report on the following subjects:

"Method of Protection to Embankments Against Currents and of Restoring Them When Washed Out." E. L. Loftin, chairman, Queen & Crescent.

"How to Prevent Iron Pipe Culverts from Pulling Apart in Soft Ground and How Best to Repair Them When Pulled Apart." A. A. Page, chairman, Boston & Maine.

"Concrete in Railway Construction, Kind of Reinforcement and Waterproofing when Necessary." C. W. Richey, chairman, Pennsylvania.

"Arrangement of Buildings and Platforms, for Small Towns, as to Convenience and Appearance." C. H. Fake, chairman, Mississippi River & Bonne Terre.

"Best Method of Determining Proper Dimensions of Openings for Waterways." W. T. Main, chairman, Chicago & North Western.

"Best Method of Obtaining Elevation on Curves on Bridges and Trestles." J. P. Snow, chairman, Boston & Maine.

"Best Method of Numbering Bridges." I. F. Stern, chairman, Chicago & North Western.

"The Economy and Practicability of Wire Glass in Roundhouses, Shops and Station Buildings." E. E. Wilson, chairman, New York Central & Hudson River.

"The Best Style and Dimensions of Hoops for Water Tanks, From 50,000 to 100,000 Gallons Capacity." F. E. Weise, chairman, Chicago, Milwaukee & St. Paul.

"Plans of Fireproof Oil Houses for Storing Large Quantities of Oil at Principal Terminal Stations." G. W. Rear, chairman, Southern Pacific.

Besides the regular business and reports, A. D. Parker, vice-president, Colorado & Southern, will address the convention on Tuesday morning, and H. Rittinghouse will present a paper entitled "Regularity and Safety," at the evening session. On Wednesday a side trip will be arranged for the afternoon and some form of entertainment for the evening. The afternoon of Thursday will be occupied by a side trip on one of the railways and in the evening by a banquet, and an all-day trip will probably be arranged for Friday. There is at present a membership of 408 in this association.

MEETINGS AND CONVENTIONS.

The following list gives names of secretaries, dates of next or regular meetings, and places of meeting.

- AIR BRAKE ASSOCIATION.—F. M. Nellis, 53 State St., Boston, Mass.
 AMERICAN ASSOCIATION OF DEMURRAGE OFFICERS.—A. G. Thomason, Scranton, Pa.; next meeting June 22, 1911; Niagara Falls, N. Y.
 AMERICAN ASSOCIATION OF GENERAL PASSENGER AND TICKET AGENTS.—C. M. Burt, Boston, Mass.; next meeting, St. Paul, Minn.
 AMERICAN ASS'N OF LOCAL FREIGHT AGENTS' ASS'N.—G. W. Dennison, Penn. Co., Toledo, Ohio.
 AMERICAN ASS'N OF RAILROAD SUPERINTENDENTS.—O. G. Fetter, Carew Bldg., Cincinnati, Ohio.
 AMERICAN RAILWAY ASSOCIATION.—W. F. Allen, 24 Park Place, New York; semi-annual, Nov. 16; St. Louis, Mo.
 AMERICAN RAILWAY BRIDGE AND BUILDING ASSOCIATION.—C. A. Lichty, C. & N. W., Chicago; Oct. 18-20; Denver, Colo.
 AMERICAN RAILWAY ENGINEERING AND MAINT. OF WAY ASS'N.—E. H. Fritch, Monadnock Bldg., Chicago; March 21-23, 1911; Chicago.
 AMERICAN RAILWAY INDUSTRIAL ASSOCIATION.—G. L. Stewart, St. L. S. W. Ry., St. Louis, Mo.; May 6, 1911; Detroit, Mich.
 AMERICAN RAILWAY MASTER MECHANICS' ASSOCIATION.—J. W. Taylor, Old Colony Building, Chicago.
 AM. RAILWAY TOOL FOREMEN'S ASS'N.—O. T. Harroun, Bloomington, Ill.
 AM. SOC. FOR TESTING MATERIALS.—Prof. E. Marburg, Univ. of Penn., Phila.
 AM. SOC. OF CIVIL ENGS.—C. W. Hunt, 220 W. 57th St., N. Y.; 1st and 3d Wed., except July and Aug.; annual, Jan. 18-19, New York.
 AM. SOCIETY OF ENGINEERING CONTRACTORS.—D. J. Haner, 13 Park Row, New York.
 AMERICAN SOCIETY OF MECHANICAL ENGINEERS.—Calvin W. Rice, 29 W. 29th St., New York; annual, Dec. 6-9; New York.
 AMERICAN STREET AND INTERURBAN RAILWAY ASS'N.—H. C. Donecker, 29 W. 39th St., New York; Oct. 10-14; Atlantic City.
 ASSOCIATION OF AM. RY. ACCOUNTING OFFICERS.—C. G. Phillips, 143 Dearborn St., Chicago; April 26, 1911; New Orleans, La.
 ASSOCIATION OF RAILWAY CLAIM AGENTS.—J. R. McSherry, C. & E. I., Chicago; May, 1911; Montreal, Can.
 ASSOCIATION OF RAILWAY ELECTRICAL ENGINEERS.—G. B. Colegrove, I. C. R.R., Chicago; annual, Sept. 27-30; Chicago.
 ASSOCIATION OF RAILWAY TELEGRAPH SUPERINTENDENTS.—P. W. Drew, 135 Adams St., Chicago; June 19, 1911; Boston.
 ASS. OF TRANS. AND CAR ACC. OFFICERS.—G. P. Conard, 24 Park Place, N. Y.; Dec. 13-14, Chicago; June 20-21, 1911, Cape May City, N. J.
 CANADIAN RAILWAY CLUB.—James Powell, Grand Trunk Ry., Montreal, Que.; 1st Tues. in month, except June, July and Aug.; Montreal.
 CANADIAN SOCIETY OF CIVIL ENGS.—Clement H. McLeod, 413 Dorchester St., Montreal, Que.; Thursdays; Montreal; annual, last week January.
 CAR FOREMAN'S ASSOCIATION OF CHICAGO.—Aaron Kline, 841 North 50th Court, Chicago; 2d Monday in month; Chicago.
 CENTRAL RAILWAY CLUB.—H. D. Vought, 95 Liberty St., New York; 2d Friday in January, March, May, Sept. and Nov.; Buffalo.
 ENGINEERS' SOCIETY OF PENN.—E. R. Dasher, Box 704, Harrisburg, Pa.
 ENGINEERS' SOCIETY OF WESTERN PENNSYLVANIA.—E. K. Hiles, 808 Fulton Bldg., Pittsburgh; 1st and 3d Tues.; annual, Jan. 17, 1911, Pittsburgh.
 FREIGHT CLAIM ASSOCIATION.—Warren P. Taylor, Rich. & Pot. R.R., Richmond, Va.; 20th annual, June 21, 1911; St. Paul, Minn.
 GENERAL SUPERINTENDENTS' ASS'N OF CHICAGO.—H. D. Judson, 209 Adams St., Chicago; Wednesday preceding 3d Thursday; Chicago.
 INDIANAPOLIS RY. AND MECH'L CLUB.—B. S. Downey, C., H. & D., Indianapolis, Ind.
 INTERNATIONAL MASTER BOILER MAKERS' ASSOCIATION.—Harry D. Vought, 95 Liberty St., New York; next convention, Omaha, Neb.
 INTERNAT'L RY. FUEL ASS'N.—D. B. Sebastian, La Salle St. Station, Chicago.
 INTERNATIONAL RAILWAY GENERAL FOREMEN'S ASSOCIATION.—L. H. Bryan, D. & I. R. Ry., Two Harbors, Minn.
 INT. RY. MASTER BLACKSMITHS' ASS'N.—A. L. Woodworth, Lima, Ohio.
 INTERNATIONAL RAILWAY CONGRESS.—Executive Committee, rue de Louvain, 11 Brussels; 1915, Berlin.
 IOWA RAILWAY CLUB.—W. B. Harrison, Union Station, Des Moines, Ia.; 2d Friday in month, except July and August; Des Moines.
 MASTER CAR BUILDERS' ASS'N.—J. W. Taylor, Old Colony Bldg., Chicago.
 MASTER CAR AND LOCO. PAINTERS' ASS'N OF U. S. AND CANADA.—A. P. Dane, B. & M., Reading, Mass.
 NEW ENGLAND RAILROAD CLUB.—G. H. Frazier, 10 Oliver St., Boston, Mass.; 2d Tuesday in month, ex. June, July, Aug. and Sept.; Boston.
 NEW YORK RAILROAD CLUB.—H. D. Vought, 95 Liberty St., New York; 3d Friday in month, except June, July and August; New York.
 NORTH-WEST RAILWAY CLUB.—T. W. Flanagan, Soo Line, Minn.; 1st Tues. after 2d Mon., ex. June, July, August; St. Paul and Minn.
 NORTHERN RAILWAY CLUB.—C. L. Kennedy, C., M. & St. P., Duluth; 4th Saturday; Duluth, Minn.
 OMAHA RAILWAY CLUB.—A. H. Christiansen, Barker Bldg.; Second Wed.
 RAILWAY CLUB OF KANSAS CITY.—C. Manlove, 1008 Walnut St., Kansas City; 3d Friday in month; Kansas City.
 RAILWAY CLUB OF PITTSBURGH.—J. D. Conway, Pittsburgh, Pa., 4th Friday in month, except June, July and August; Pittsburgh.
 RAILWAY SIGNAL ASSOCIATION.—C. C. Rosenberg, 12 North Linden St., Bethlehem, Pa.; annual, Oct. 11-13; Richmond, Va.
 RAILWAY S'KEEPERS' ASS'N.—J. P. Murphy, Box C. Collinwood, O.; annual, May, 1911.
 RICHMOND RAILROAD CLUB.—F. O. Robinson; 2d Monday; Richmond.
 ROADMASTERS' AND MAINTENANCE OF WAY ASS'N.—Walter E. Emery, P. & P. U. Ry., Peoria, Ill.; Oct., 1911; St. Louis.
 ST. LOUIS RAILWAY CLUB.—B. W. Frauenthal, Union Station, St. Louis, Mo.; 2d Friday in month, except June, July and Aug.; St. Louis.
 SOCIETY OF RAILWAY FINANCIAL OFFICERS.—C. Nyquist, La Salle St. Station, Chicago; Oct. 25 and 26; Hotel Chamberlin, Old Point Comfort, Va.
 SOUTHERN ASSOCIATION OF CAR SERVICE OFFICERS.—E. W. Sandwich, A. & W. R. Ry., Montgomery, Ala.; annual, Oct. 20; Atlanta.
 SOUTHERN & SOUTHWESTERN R.R. CLUB.—A. J. Merrill, Prudential Bldg., Atlanta; 3d Thurs., Jan., Mar., July, Sept. and Nov.; Atlanta.
 TOLEDO TRANSPORTATION CLUB.—L. G. Macomber, Woolson Spice Co., Toledo; 1st Sat.; annual, May 6, 1911, Toledo.
 TRANSPORTATION CLUB OF BUFFALO.—J. M. Sells, Buffalo; 1st Sat. after 1st Wed.; annual, Dec. 13; Buffalo.
 TRAFFIC CLUB OF NEW YORK.—C. A. Swope, 290 Broadway, New York; last Tuesday in month, except June, July and August; New York.
 TRAIN DESPATCHERS' ASS'N OF AMERICA.—J. F. Mackie, 7042 Stewart Ave., Chicago; annual, June 20, 1911; Baltimore.
 TRAVELING ENGINEERS' ASSOCIATION.—W. O. Thompson, N. Y. C. & H. R., East Buffalo.
 WESTERN CANADA RAILWAY CLUB.—W. H. Rosevear, P. O. Box 1707, Winnipeg; 2d Monday, except June, July and August; Winnipeg.
 WESTERN SOCIETY OF ENGINEERS.—J. H. Warder, Monadnock Bldg., Chicago; Wednesdays, except July and August; Chicago.

Traffic News.

The Interstate Commerce Commission has revoked its suspension, dated September 3, of "tap line" tariffs, which had been filed by the Chicago, Rock Island & Pacific.

Between Oroville, Cal., and San Francisco, according to a press dispatch, freight rates have been reduced 25 per cent.; this as a result of the opening of the Western Pacific.

The Morgan Line steamers have made important advances in freight rates on 100 or more commodities from New York City to points in Texas. These advances take effect October 1.

The Providence (R. I.) Board of Trade has held a special meeting and protested against the action of the railways in reducing from 96 hours to 48 hours the free time to be allowed for unloading cars.

The state railroad commissioners of Kansas have filed complaints with the Interstate Commerce Commission against the Missouri Pacific and 38 other roads, alleging unreasonable and discriminatory rates on flour shipped from the state of Kansas to New Orleans.

At New Orleans, according to a press dispatch of September 24, over 400 freight clerks of the New Orleans & Northeastern have struck and left their work because the railway had refused their demand for an increase of pay. Two freight houses had to be closed on account of the strike.

The Transatlantic Steamship Conference reports the following steamship passenger business for the year to September 23 in comparison with that of last year:

	Westbound			Eastbound		
	1910.	1909.	Incr'se.	1910.	1909.	Incr'se.
First class	75,051	67,411	7,640	93,369	82,469	10,900
Second class	182,119	148,146	33,973	92,954	79,067	13,887
Steerage	821,907	712,207	109,700	230,753	191,624	39,129

The New York, New Haven & Hartford announces that the through night train between New York City and Portland, Me., which hitherto has been run only during the summer, will not be taken off this autumn. It will leave New York, however, at 10.40 p.m., 2 hours and 40 minutes later than now. The train leaving New York at 5.02 p.m. is to be run through to Springfield, 136 miles, in three hours. This is faster time than is made by any other train between New York and Springfield.

The Southern Pacific has issued a tariff, effective October 16, increasing the rates on green lumber from Portland and Willamette valley points to San Francisco bay points from \$3.40 and \$3.65 to \$5 flat. The company sought to make this increase three years ago, but was prevented by an order of the Interstate Commerce Commission. The road appealed the case, and it is now in the United States Supreme Court. The commission's order will expire at the time the Southern Pacific proposes to make the advance effective.

The Texas railway commission has given notice that it will give a hearing on September 30 regarding the switching rates of the Galveston Wharf Company. This company has given notice that after October 1 it will discontinue switching cars for \$1.75 a car and will expect a division of the through rate on the same basis that the Gulf, Colorado & Santa Fe has made with the Texas City Terminal Company. The railways claim that such a demand on the part of the Galveston Wharf Company would be unreasonable.

The Interstate Commerce Commission has suspended the tariffs which have been issued by the railways of New England reducing, on October 1, the free time to be allowed for unloading freight cars from 96 hours to 48 hours. From the action of the commissioners on demurrage questions in the past, it seems reasonable to conclude that they are strongly in favor of this reasonable change in the amount of free time; but the consignees have complained—as, of course, they will complain at every advance of any kind—so, of course, the commission must call upon the roads to present formal statements justifying their action.

Patrons and employees of the Atlanta & West Point recently

petitioned the state railway commission of Georgia to allow the road to increase its passenger fares from two cents a mile to two and a half cents; and this was followed in a short time by another petition from other patrons asking the commission to deny the request which had been made in behalf of the road. For assurance and simplicity, the argument of the later petitioners seems to surpass anything which has recently come to notice. It is declared that the reduction of the fares from three cents to two cents increased passenger revenue 25 per cent., and that if the rates are now put on the basis of 2½ cents, the total increase in earnings, as compared with the old three-cent rate, will be 62 per cent. Furthermore, it is declared that the property of the road is worth five times what the stockholders paid for it.

The Interstate Commerce Commission is to inquire into proposed advances of grain rates from points in North Dakota and South Dakota to St. Paul and Chicago; hearing to be held at Aberdeen, S. Dak., October 10. The tariffs were filed by the Chicago & North Western; the Chicago, Milwaukee & St. Paul; the Chicago, St. Paul, Minneapolis & Omaha; the Great Northern; the Minneapolis & St. Louis; the Minneapolis, St. Paul & Sault Ste. Marie and the Northern Pacific. Advances in rates on flaxseed and flaxseed products from St. Paul, Minneapolis and Missouri river transfer points to Duluth and Superior will be investigated at St. Paul October 13. At Kansas City, October 5, a hearing will be had as to the reasonableness of recent advances on cement made by the Atchison, Topeka & Santa Fe, the Missouri Pacific, the Missouri, Kansas & Texas, the St. Louis & San Francisco and the Union Pacific.

O. B. Colquitt, a member of the Texas Railway Commission and the Democratic candidate for Governor of Texas, has written a letter to Governor Stubbs, of Kansas, suggesting federal legislation to empower groups of states to regulate the traffic moving between them. Mr. Colquitt adds: "It may be well also to amend the interstate commerce commission act so as to provide for a division of the country into contiguous districts, composed of states which largely interchange or exchange products with each other, and provide for the appointment of an interstate commerce commission for each of these districts, who could frequently consult with the railway commissions of the different states comprising that district, with authority to promulgate orders affecting rates for said districts subject to revision by the full membership of the Interstate Commerce Commission at fixed intervals or on extraordinary occasions at called sessions."

New Boat Lines on the Mississippi River.

The Mississippi Valley Transportation Company of St. Louis has announced that on November 1 it will begin running packet boats between St. Louis and New Orleans, Galveston and other Texas points. It is also announced that the rates will be about half those now made by the rail lines. Two new type steel packet freight boats will be run between St. Louis and New Orleans, and a third boat will be run to Galveston. The *Dallas News* says: "The new packets are 550 feet in length, have 60 feet beam, with a width over guards of 95 feet. The depth of hold is 14 feet and with full load of 6,000 tons they draw only 7½ feet of water. It is claimed that the boats will carry 3,000 tons on 4½ feet draft. On the St. Louis-New Orleans run it is intended to make the round trip in ten days.

"The boats cost about \$300,000 each. The proposed rates are as follows (with comparison with rail rates):

	1	2	3	4	5	a	b	c	d
Water rates	55	50	45	42	40	41	38	35	30
Rail rates	147	129	112	102	80	85	75	62	50

Car Surpluses and Shortages.

Arthur Hale, chairman of the committee on relations between railways of the American Railway Association, in presenting statistical bulletin No. 79, giving a summary of car shortages and surpluses by groups from April 20, 1909, to September 14, 1910, says:

"The surplus reported totals 54,890 cars, a decrease of 5,132. The shortage totals 7,814, a decrease of 1,479. There were decreases in the surplus in all territories, excepting group 2 (East-

ern), where an increase in coal and gondola cars offset the decrease in box, group 5 (Southern), which also reports an increase in coal and gondola, and group 8 (Middle Western), where both box and coal increased.

shortage is chiefly in group 4 (North Atlantic), where the box and coal car shortage that developed within the past four weeks has been considerably reduced.”

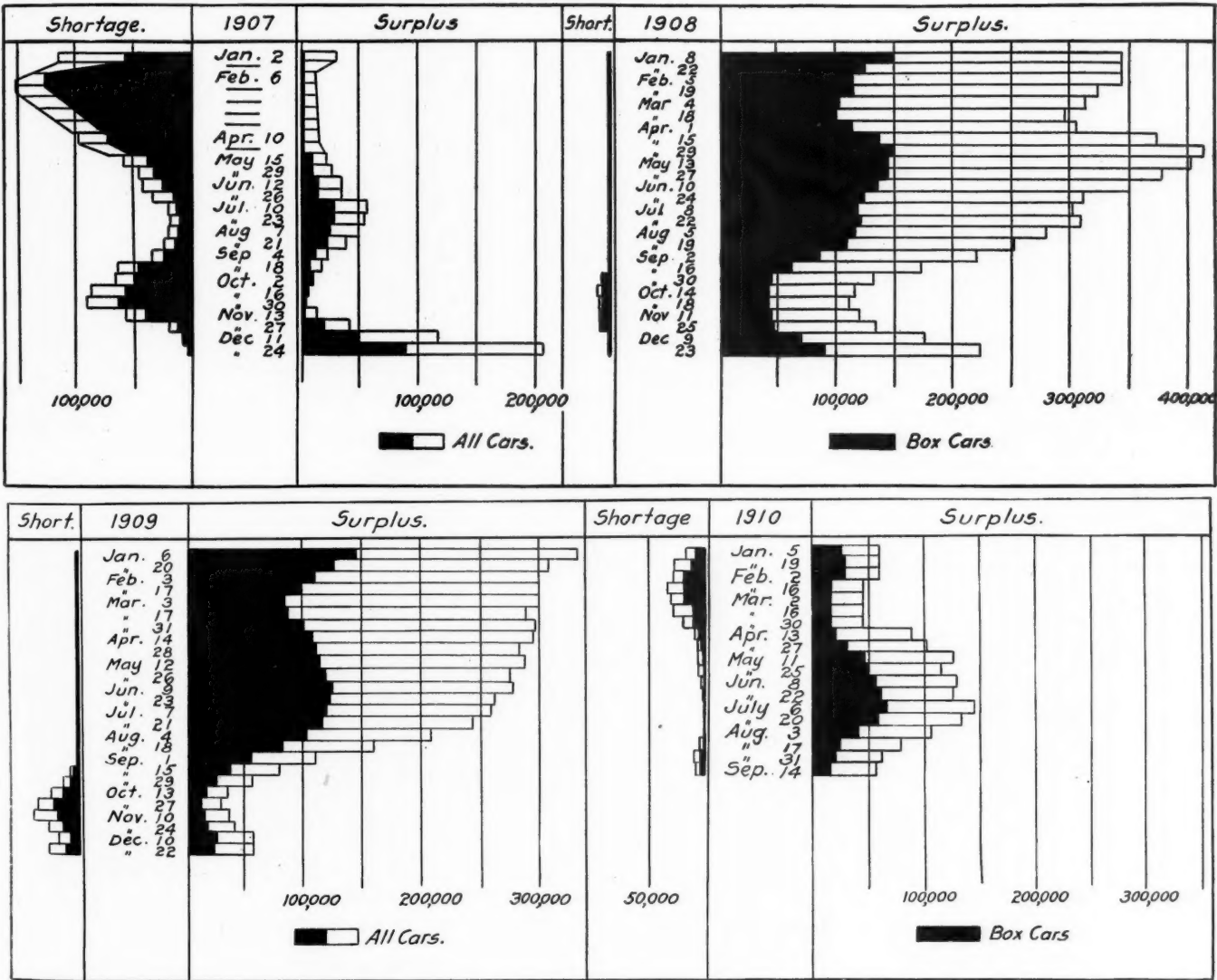
The accompanying table gives the surpluses and shortages by

CAR SURPLUSES AND SHORTAGES.											
Date.	No. of roads.	Surpluses					Shortages				
		Box.	Flat.	Coal, gondola and hopper.	Other kinds.	Total.	Box.	Flat.	Coal, gondola and hopper.	Other kinds.	Total.
Group *1.—September 14, 1910.....	8	6	485	200	159	850	120	96	505	0	721
" 2.—" 14, 1910.....	21	1,363	112	5,201	7,186	13,862	165	2	47	83	297
" 3.—" 14, 1910.....	22	3,860	155	355	2,375	6,745	75	216	127	36	454
" 4.—" 14, 1910.....	10	268	4	257	470	999	336	370	1,450	250	2,406
" 5.—" 14, 1910.....	17	759	104	569	775	2,207	427	109	223	0	759
" 6.—" 14, 1910.....	19	6,726	680	1,660	2,453	11,519	1	5	5	3	14
" 7.—" 14, 1910.....	3	81	17	0	179	277	24	0	22	157	203
" 8.—" 14, 1910.....	13	1,699	145	2,454	1,946	6,244	0	10	6	4	20
" 9.—" 14, 1910.....	9	441	389	227	717	1,774	192	5	43	0	240
" 10.—" 14, 1910.....	18	1,064	526	2,109	4,080	7,779	1,424	105	46	255	1,830
" 11.—" 14, 1910.....	5	1,519	237	15	863	2,634	604	175	0	91	870
Total	145	17,786	2,854	13,047	21,203	54,890	3,368	1,093	2,474	879	7,814

*Group 1 is composed of New England lines; Group 2—New York, New Jersey, Delaware, Maryland, and Eastern Pennsylvania lines; Group 3—Ohio, Indiana, Michigan and Western Pennsylvania lines; Group 4—West Virginia, Virginia, North and South Carolina lines; Group 5—Kentucky, Tennessee, Mississippi, Alabama, Georgia, and Florida lines; Group 6—Iowa, Illinois, Wisconsin, Minnesota and the Dakotas lines; Group 7—Montana, Wyoming and Nebraska lines; Group 8—Kansas, Colorado, Missouri, Arkansas and Oklahoma lines; Group 9—Texas, Louisiana and New Mexico lines; Group 10—Oregon, Idaho, California and Arizona lines; Group 11—Canadian lines.

“In groups 3 (Central) and 6 (Northwestern) there are material decreases in the coal car surplus, probably due in part to the resumption of mining in the Illinois field. The decrease in

groups for the latest period covered by the report, and the charts show total surpluses and shortages weekly in 1907, 1908, 1909 and 1910.



Car Surpluses and Shortages in 1907, 1908, 1909 and 1910.

REVENUES AND EXPENSES OF RAILWAYS.

MONTH OF JULY, 1910.
(See also issues of September 7 and 21.)

Name of road.	Mileage operated, end of period.	Operating revenues				Maintenance			Operating expenses			Total.	Net operating revenues (or deficit).	Outside operations, net.	Taxes.	Operating income (or loss).	Increase (or dec.) income comp. with last year.
		Freight.	Passenger.	Inc. misc.	Total.	Way and structures.	Equip.	Of	Traffic.	Trans- portation.	General.						
Atlantic & St. Lawrence	167	\$44,010	\$28,504	\$81,496	\$172,504	\$90,402	\$28,901	\$119,301	\$4,864	\$40,790	\$3,298	\$93,255	\$11,759	.....	\$8,453	\$20,211	-\$85,041
Atlantic City	167	71,443	224,962	305,711	502,116	21,560	11,914	33,474	3,023	119,301	2,785	188,643	147,068	-\$11,765	7,000	128,303	19,008
Baltimore & Ohio	4,434	5,668,876	1,455,781	7,547,732	13,672,389	1,118,732	1,345,172	2,463,904	201,762	2,598,244	159,928	5,423,890	2,123,842	-\$11,805	209,572	1,902,464	-\$12,920
Belt Ry. of Chicago	21	.....	.....	236,734	236,734	24,463	31,202	55,665	556	80,799	6,294	143,314	93,420	.....	5,000	88,420	17,260
Denver, Northwestern & Pacific	214	42,690	64,638	111,199	198,527	16,823	14,775	31,598	4,059	28,187	4,584	68,433	49,766	.....	3,000	39,766	-\$5,494
Detroit, Grand Haven & Milwaukee	190	41,202	57,699	121,486	219,387	16,151	15,640	31,791	6,835	74,415	8,611	117,179	4,307	31	3,009	1,329	-\$1,172
Georgia Southern & Florida	395	103,110	65,373	191,990	294,473	20,190	40,428	60,618	5,997	76,841	8,611	152,067	39,923	.....	8,333	31,590	-\$1,976
Grand Trunk Western	336	190,194	196,148	420,516	806,858	34,616	71,601	106,217	19,956	175,804	12,015	313,992	106,524	.....	31,697	74,318	-\$4,889
Hocking Valley	350	521,935	83,785	600,192	1,102,757	74,613	103,439	178,052	9,054	204,697	12,288	404,021	256,171	.....	27,900	228,371	24,335
Illinois Central	4,550	2,963,368	1,093,984	4,677,441	8,634,793	761,986	1,012,757	1,774,743	120,565	1,537,022	101,896	3,534,297	1,143,214	-\$6,132	198,000	939,082	560,666
International & Great Northern	1,169	466,180	175,194	692,379	1,333,753	151,852	111,508	263,360	18,648	281,954	21,634	585,596	106,783	.....	20,000	86,783	83,127
Kanawha & Michigan	175	228,870	31,400	266,196	320,396	40,500	47,273	87,773	3,938	75,981	6,134	173,776	92,420	.....	7,644	84,768	11,663
Louisiana Ry. & Nav. Co.	350	90,698	21,562	122,969	154,260	24,854	14,194	39,048	4,787	53,278	6,643	103,750	19,219	.....	4,400	14,819	4,277
Mo., Kan. & Texas Ry. Co. of Texas ..	1,348	374,861	302,831	726,266	1,398,957	146,362	78,151	224,513	24,337	349,232	31,945	630,927	96,259	.....	22,500	71,678	-\$8,311
Nevada Northern	165	112,876	12,965	129,847	142,841	8,310	14,743	23,053	322	25,655	4,238	53,268	76,579	.....	3,122	73,457	-\$1,620
New York, Chicago & St. Louis	560	682,943	173,359	888,969	1,545,271	115,970	99,321	215,291	49,778	351,659	14,360	631,088	257,881	.....	34,500	221,138	-\$8,893
Philadelphia & Reading	1,022	2,450,167	626,724	3,261,514	6,138,405	359,143	566,909	926,052	51,518	1,070,383	65,397	2,113,355	1,145,159	.....	84,437	1,079,469	68,822
San Antonio & Aransas Pass	727	173,302	95,427	287,966	373,729	48,650	41,614	90,264	4,798	109,853	8,620	213,586	74,430	.....	9,000	65,430	11,550
Seaboard Air Line	3,028	979,113	366,104	1,502,245	2,847,462	235,948	239,397	475,345	56,836	539,215	44,575	1,106,271	395,974	.....	65,000	328,061	-\$6,565
Ulster & Delaware	129	69,398	74,284	149,563	243,942	16,843	13,698	30,541	1,360	45,916	2,381	83,128	63,435	.....	3,300	63,104	-\$6,468
Wabash	2,514	1,451,455	716,409	2,344,431	4,512,295	327,229	398,758	725,987	83,385	893,268	63,213	1,765,838	578,938	.....	63,176	510,110	-\$7,026
Western Maryland	543	482,703	125,048	635,116	1,242,867	78,459	65,980	144,439	12,319	198,015	12,430	387,203	267,913	.....	19,500	248,413	248,413
Yazoo & Mississippi Valley	1,372	436,391	187,702	671,925	1,295,018	177,239	137,613	314,852	13,892	242,069	22,647	583,460	87,665	.....	33,000	54,005	113,613

*From July 1, 1910, includes C. T. & V. R.R. Co., O. & L. K. R.R., R. S. & G. Ry. Co., Valley Ry. Co. of Va., previously reported separately. †Prior to July 1, 1910, included in returns of Missouri, Kansas & Texas Ry. Co. ‡Indicates Deficits, Losses and Decreases.

Hearing in Western Rate Cases.

Commissioners Prouty, Clark and Lane continued to take testimony at Chicago last week in the cases involving advances in freight rates in the west. W. A. Gardner, vice-president of the Chicago & North Western, testified for that road. He stated frankly that the North Western is prosperous and that there is no danger that it will be bankrupt right away if it is not allowed to make the advances under consideration. He said, however, that it has reached the limit of reductions in operating expenses by grade revision and similar economies, and requires an advance in its rates to maintain a proper surplus and keep up its credit. In order to maintain its credit it must have a certain amount above its immediate needs for wages and the purchase of materials. "The exercise of the right of eminent domain," he said, "while it may give the power to regulate railroads, does not render the North Western immune from the ordinary commercial rules when we undertake to borrow money, and if we are not allowed to earn a surplus we will become embarrassed and will cease to be the aggressive force in the communities we serve that we have been."

He was asked what would happen if the so-called weaker roads were permitted to earn revenues that would enable them to become as strong financially and physically as the North Western. He replied that the effect would be that the North Western would put the additional surplus back into its property and give the public the benefit of much better service. Asked if he thought that when the surplus is put back into the property the people should be expected to pay freight rates on the increased value due to this, he replied that if the value of the property be an element in rate-making, then the surplus will find expression in the valuation of the property.

"But it has not been the policy of the North Western and never will be to issue any bonds or stocks against its surplus. It has put almost \$30,000,000 of its surplus into the property during the last 10 years and never capitalized a dollar of it, and it is due to this fact and to the fact that it is still able to earn a surplus that it can borrow money at 4 per cent."

Commissioner Clark said to Mr. Gardner: "Suppose your property was inventoried at \$125,000 a mile and that alongside the North Western was another road that would be appraised at \$65,000 a mile. Could the rates be made on the value of the properties?" Mr. Gardner replied: "I think that is a conundrum that we are all seeking to answer, and I am glad that I do not have to do it. In such a case as you suggest, we could not get any higher or lower rates than the other road, and I admit that justice in rate-making to some lesser line might extravagantly increase our revenue, if you please, but I do not possess the wisdom to know how that problem should be solved."

He said he did not think that a road should be allowed to earn an extravagant surplus, or one that would encourage extravagant administration, but it should have a large enough one to protect it against loss due to a decline of traffic due to a failure of crops or other causes. "The surplus, Mr. Gardner continued, "belongs to the stockholders. Now, it is beyond any man, I think, to say how much of that surplus is due to extraordinary remunerative rates and how much of it is due to extraordinary zealous administration. Both elements enter into the creation of the surplus."

"We might have had a million and a half last year more than we did have, and who would be the wiser? I do not suppose you would have accused us of maladministration or an effort to throw the company's money away, so that the surplus does not in every instance express a higher rate. It expresses a remunerative rate as well as an efficient administration. If the position were swept away that efficient administration produces a surplus as well as high rates, there would be no incentive for efficient administration, because humanity on a railway is pretty near the same that it is in a lawyer's office, or anywhere else, I fancy."

Mr. Gardner, like preceding witnesses, gave detailed figures showing the causes of increases in the expenses of the railways. He showed that the increases in wages for different classes of employees had been from 10 to 40 per cent. prior to January 1, 1910, and since then had amounted on the North Western to \$571,900 a year. He stated that the locomotive engineers have already presented demands for an increase of \$800,000 a year and that he understood an increase for the trainmen is also to be asked for. He said that he had made no appraisal of the

North Western's property, but that in his judgment its reproduction would cost well over \$50,000 a mile, which exceeds its capitalization. Asked regarding increases in the cost of maintenance, he said it is the policy of the North Western constantly to improve the condition of its property and that the increase of \$2,352,072 in expenditures for maintenance of way and structures was due to the fact that last year there was a phenomenal outlook for business and the road made phenomenal preparation to meet it.

He was asked how the commission was to know that the road would not go on increasing the amount of the improvements which it regarded as maintenance. He replied: "The physical condition of a railway is like a case of typhoid fever. It never stands still, but gets better or worse. If prospective business demands great expenditures for up-keep we should make them."

Inquiries regarding the North Western's method of keeping its accounts brought the reply that they were kept in strict accordance with the spirit and the letter of the rules of the Interstate Commerce Commission, and that if there was any criticism of its methods it should be made to the commission.

William Ellis, commerce counsel for the St. Paul, after filing a large number of statistical exhibits, was cross-examined by attorneys for the shippers. Mr. Ellis brought out prominently the point that while the railway business is regarded as one of increasing returns, whether it is one or not depends on whether the unit costs for carrying it on increase. If unit costs did not increase returns would increase as traffic did, but, as a matter of fact, unit costs have been increasing, with the result that the lines of expense and earnings tend to converge. He said in order to put the St. Paul on a sound basis its earnings should be increased \$1,500,000 a year.

I. G. Scott, auditor, and W. G. Bierd, general manager, of the Minneapolis & St. Louis and the Iowa Central, testified for these roads. Their testimony showed that while the net revenue of the Minneapolis & St. Louis increased from \$1,219,000 to \$1,372,000 in 1910, its surplus decreased from \$296,598 to \$22,062, in spite of the fact that its dividend had been reduced from 5 to 2½ per cent. It was shown that the Iowa Central had not paid dividends in 15 years.

S. B. Schuyler, general auditor of the Missouri Pacific, introduced a large amount of statistical evidence for this road. He showed that its average cost per mile has been \$38,418 and that the net return on the investment decreased from 2.89 per cent. in 1900 to 2.49 per cent. in 1910. He stated that the proposed increases in rates would increase the earnings of his road only \$94,863 per year. C. J. McPherson, assistant to the general manager of the Missouri Pacific, gave detailed statistics showing increases in the expenses of the road. A table which he filed showed that since 1900 the gross operating revenues of the Missouri Pacific have increased from 60.4 per cent., while wages have increased 101.8 per cent., other expenses 38.2 per cent., and total operating expenses 73.8 per cent. In 1900 the percentage of wages to total expenses was 56 per cent. and in 1900 it was 65 per cent.

E. B. Boyd, assistant to the vice-president of the Missouri Pacific, while on the witness stand, and J. C. Jeffery, commerce counsel for that road, told the commission they did not regard the advances in rates that had been made by the Western roads as the only ones they were entitled to make, and that it was the policy of the Missouri Pacific to make all of the advances that may be necessary in order to enable it to earn a proper return. Mr. Jeffery called attention to the fact that the Missouri Pacific is not paying dividends, and said that it feels that it ought to be able to earn both a reasonable dividend and a surplus.

Mr. Boyd told in detail of the various improvements in service that had been made by his line and others which tended to increase their operating expenses. He contended that the railways should be able to earn enough not only to maintain their operating and other charges but in addition enough to yield a return on the investment equal to the average return earned by other businesses in the territories through which they run. He declared that 20 per cent. would not be an unreasonable amount for a railway to earn if its rates were not extortionate per se. He contended that rates which do not put an undue burden on commerce are not excessive even if by charging them a railway earns a very large return.

After the completion of the testimony for the Missouri Pacific the Burlington opened its case. Before putting any witness on the stand Chester M. Dawes, its general counsel, made a state-

ment of the position it intended to take. He said that the net earnings of the Burlington for 1910 exceeded those for 1909, but that its operating ratio increased.

"The Burlington," Mr. Dawes continued, "will claim, on the basis of decisions of the supreme court of the United States, which we insist are a guide to every administrative body and subordinate court, that it is entitled to a fair return on the value of its property, that is, the cost of reproducing it however that value may have been created, whether out of earnings, from the receipts of securities, or from the natural increment in the value of the property. The governmental policy is to include all of these elements in determining the taxes which a railway must pay for the support of the government, and we insist, therefore, that we must be given the benefit of that value when the question of what rates may be charged is under determination. The Burlington believes that the only limit upon its right to a fair return upon the value of its property is that the rate which is used to produce that return shall at all times be just and reasonable and impose no undue burden upon the shipper. If counsel for the shippers assert the contrary and say that in rate making there should be an additional limit, it rests with them to overturn that legal proposition in the highest tribunal in the land. The casual opinions of traffic men and operating men as to whether or not we should be allowed to have the benefit of the increment of our value, or should be allowed to increase the value of our property out of earnings, is absolutely of no importance whatever. It is a question of law in which the burden to overcome the views I have contended for is on counsel for the shippers."

Commissioner Clark asked Mr. Dawes whether, in his opinion, as between several railways doing a competitive business, if the commission or courts should fix rates on which the railways having the largest investment could earn a reasonable return they would do full justice to all of the railways. Mr. Dawes replied that the question of what the rate on several competing roads should be was a practical question, and that he had been stating merely the Burlington's legal position.

C. I. Sturgis, general auditor of the Burlington, stated that its surplus for 1910 was \$1,113,000, but the estimated amount of the advance in wages already made and to come would be \$2,714,000. These advances in wages would, therefore, on present rates, wipe out the surplus and create a deficit of over \$1,600,000. He said that if the road's budget should be increased the way it ought to be in 1911 it, in connection with the wage advances, would wipe out the surplus for 1910 and create a deficit of \$8,085,048. Mr. Sturgis showed that 93.5 per cent. of the increase in gross earnings in 1910 was used up in increased operating expenses. He stated that the book cost of the road, less sinking fund, is \$432,076,500. Its total capitalization is \$320,695,100. The amount of gross corporate income available for sinking funds, betterments, improvements, interest and dividends in 1910 was \$22,481,636. Deducting from this the sinking fund and betterment items leaves a net income applicable to interest and dividends of \$18,485,755. This was 5.76 per cent. on the road's capitalization and 4.28 per cent. on its cost. The value of the property was estimated at \$450,000,000. The net return on this was 4.11 per cent. If the amount expended for betterments and charged to income were added to the amount available for interest and dividends the return on the capitalization would be 6.8 per cent.; on the cost of the property 5.05 per cent.; on the estimated present value, 4.85 per cent. Deducting from the capitalization of the Burlington the amount it has invested in the securities of other companies, etc., and from its earnings the amount of interest and dividends that it derives from its outside investments, leave it with a return on its net capitalization of 6.79 per cent. and on the investment in the property of 4.75 per cent. Mr. Sturgis gave figures which showed strikingly how much more rapidly operating expenses had increased than gross earnings in recent years. He said since 1901 gross earnings have increased 62.31 per cent. and operating expenses 62.4 per cent. per mile of road; since 1903 gross earnings have increased 32.24 per cent. and operating expenses 51.53 per cent.; since 1907 gross earnings have increased 6.68 and operating expenses 20.68. He estimated that the increase in earnings that would be caused by the advance in rates which had been suspended would be \$231,200 per year.

The question was raised as to whether the reasonableness of specific advances in rates was to be inquired into. Mr. Dawes said the understanding of the roads was that the commission

was merely going to inquire as to whether the roads needed more money. Commissioner Clark said that there is no purpose at present of going into the question of reasonableness of any specific rate.

F. E. Ward, general manager of the Burlington, testified that while his road's valuation as estimated by Mr. Sturgis was 450 millions, he believed the cost of reproduction would really be not less than 530 millions, and that the smaller figure was used by Mr. Sturgis to make sure of keeping within a reasonable limit. Mr. Ward's estimate amounts to \$60,000 a mile and includes: Lands used for terminals in cities, \$111,000,000; equipment, \$74,000,000; land for right of way in addition to terminals, \$45,000,000; such items as roadway, track, ties, terminal facilities, buildings, etc., \$300,000,000. He estimates that the Chicago terminals alone are worth \$48,000,000.

STATE COMMISSIONS.

Henry B. Seaman, chief engineer of the New York Public Service Commission, First district, has resigned, saying in his letter tendering his resignation that he did not wish to continue to take responsibility for plans for subway building when he was not given full authority in making these plans. George S. Rice, chief of the Bureau of Subway Construction, has also resigned. He says that his resignation was because the work on which he had been engaged has been finished.

The Railroad Commission of Louisiana, after having carefully considered applications filed by the various express companies for a postponement of the hearing on express rates assigned for September 29 at Baton Rouge, the commission has decided to grant the application, and the express cases assigned for that date will be postponed until further notice. In explanation of its action, the commission wishes it to be understood that its reasons for postponing this hearing are all in the interest of the public. It is certain that so important a case cannot be disposed of hurriedly, and the great amount of research and investigation necessary even to a preliminary hearing renders delay imperative. No changes will be made in any rates or classifications now in effect, except such reductions as may be voluntarily put into effect by the express companies.

COURT NEWS.

The supreme court of the state of Washington has ruled that when the state commission is defeated in litigation in one of the lower courts it may appeal. Counsel for the railways contended that the commission had no direct right of appeal.

The Missouri river rate cases have again come before the Supreme Court of the United States. The court's decision upholding the orders of the Interstate Commerce Commission reducing the rates was attacked as an illegal attempt of the commission to create zones of traffic. The supreme court could see no such attempt and a rehearing was demanded. Now the government has filed its reasons for objecting to a rehearing. It claims that unless the mandate of the court is issued shortly after October 10, when the term begins, the cases will become moot, as the orders of the commission will expire November 10. The railways now declare that if the final decision of the court is against them, shippers will present claims for reparation amounting to \$250,000.

The State Railways of Chile in 1909 had an extent of 1,703 miles, and 63 miles more than in 1908. Their gross earnings were \$47,169,802, which is at the rate of \$27,700 per mile; but the expenses (probably including interest on securities) were \$58,734,301, or \$34,490 per mile, or 124½ per cent. of the earnings. The very large earnings per mile are explained by the nature of the Chilean dollar, which is depreciated, and was more so in 1909 than the year before, when earnings were \$2,177,000 less, but expenditures \$7,083,000 more, being then 146 per cent. of the receipts. In 1909 it was reported that more than 100 new locomotives and 2,000 cars were required to make good the stock. Chilean works, for the most part, supply the rolling stock.

Railway Officers.

ELECTIONS AND APPOINTMENTS.

Executive, Financial and Legal Officers.

C. A. Caldwell has been elected first vice-president of the Alton, Jacksonville & Peoria, with office at Alton, Ill., succeeding Robert Currie, resigned.

Timothy E. Byrnes, vice-president of the New York, New Haven & Hartford at Boston, Mass., has been elected vice-president also of the Boston & Maine. Mr. Byrnes was born at



T. E. Byrnes.

Bellows Falls, Vt., in 1855. He lived there for nine years until 1864, when his parents went to Minnesota, where his father became a prosperous farmer. The son, after attending the public schools, entered the University of Minnesota. He graduated in 1879, taking the degree of Bachelor of Science. After passing two or three years in a law office he went to Columbia Law School, covering the course of two years in a single year, but, under the two years' requirement of the school, not receiving his degree. Returning to Minnesota, he was admitted to

the bar of that state in 1882. Following several years of general practice, he took up railway law as a specialty and became counsel in various suits for a number of railway corporations of the state until 1897, when he went to the Northern Pacific as representative of President Mellen, having supervision not only of many legal matters but, to a considerable extent, of operation and traffic. Mr. Mellen went to the New York, New Haven & Hartford as president in November, 1903, and in March, 1905, called his former coadjutor from the Northern Pacific to the position of assistant to the president, with office in Boston—a position since raised to one of the vice-presidencies of the company. At Boston, Vice-President Byrnes has had for years a "diplomatic" position of high importance in solving not merely traffic problems but in dealing with the civic questions raised in the public and legislative resistance to the New Haven's control of the Boston & Maine. He also, for a time, represented his company at Washington while the federal suit against the New Haven under the Sherman anti-trust act of 1890 was pending—a suit which the federal department of justice withdrew in the spring of 1909.

Operating Officers.

W. E. Leonard, car accountant of the Gulf & Ship Island, at Gulfport, Miss., has been appointed superintendent of transportation, his former position having been abolished.

M. O. Gay has been appointed trainmaster of the Chicago, Rock Island & Gulf, with office at Ft. Worth, Tex., a position which was abolished some months ago and is now re-established.

H. W. McAbee has been appointed superintendent of dining cars of the Denver & Rio Grande, with office at Denver, Colo., succeeding T. A. Dempsey, resigned to enter the service of another company.

W. D. Dunning, trainmaster of the passenger terminal of the Illinois Central at Chicago, has been appointed superintendent of the passenger terminal at Chicago. W. H. Gerry succeeds Mr. Dunning.

R. F. Ledford, assistant trainmaster of the Chicago, Burlington & Quincy at St. Joseph, Mo., has been appointed an assistant superintendent, with office at Brookfield, Mo., succeeding E. J. Worden, transferred.

F. W. Egan, having recovered his health, will resume his duties as superintendent of the Western division of the Grand Trunk, with office at Detroit, Mich., and J. Ehrke, acting superintendent, will resume his duties as assistant superintendent 25th district (main line) and 26th district, with office at Battle Creek.

The Hine system of organization having been established on the Corvallis & Eastern, the titles of general superintendent, superintendent of motive power and chief engineer have been abolished, and the following officers will hereafter be designated as assistant general manager. M. J. Buckley, formerly general superintendent; George W. Boschke, formerly chief engineer, and J. F. Graham, formerly superintendent of motive power, all with office at Portland; and J. D. Stack and C. G. Sutherland. In a previous issue we announced the appointment of the above to similar positions on the Oregon Railroad & Navigation Company.

Traffic Officers.

W. D. Cook has been appointed general freight and passenger agent of the Brinson Railway, with office at Sylvania, Ga.

C. W. Andrews has been appointed a commercial agent of the Missouri, Oklahoma & Gulf, with office at Dallas, Tex.

M. G. Buffington has been appointed a traveling freight agent of the St. Louis & San Francisco, with office at Oklahoma City, Okla.

G. A. Freeze, provincial agent of the Maine Central, has resigned, and G. W. Miller has been appointed a commercial agent, with headquarters at St. John, N. B.

Charles E. E. Ussher, whose appointment as passenger traffic manager of the Canadian Pacific at Montreal, Que., has already been announced in these columns, was born December 29, 1857, at Niagara Falls, Ont. He began railway work in 1874 as a clerk in the auditor's office of the Great Western. From May, 1876, to June, 1880, he was clerk in the general passenger department of the same road and then for about three years was chief ticket clerk of the Wabash, St. Louis & Pacific, now a part of the Wabash Railroad. He was then for about six months rate clerk of the Chicago & Atlantic, now a part of the Erie Railroad. For three years, from November, 1883, he was out of railway work engaged in commercial business at Hamilton, Ont. In November, 1886, he was appointed chief ticket clerk of the Canadian Pacific and was made assistant general passenger agent in May, 1889, remaining in that position until January, 1898, when he was appointed general passenger agent, eastern lines, of the same road. Mr. Ussher was appointed assistant passenger traffic manager, western lines, of the Canadian Pacific on January 1, 1907, with office at Winnipeg, Man., which position he held until his recent appointment as passenger traffic manager at Montreal.

H. H. Swearingen, general agent of the Chicago, Burlington & Quincy at Billings, Mont., has been appointed commercial agent of the Burlington, the Colorado & Southern and the Colorado Midland, with office at San Francisco, Cal.

W. H. Askew, traveling freight and passenger agent of the New Orleans, Mobile & Chicago, has been appointed a commercial agent, with office at Memphis, Tenn. J. O. Gaither has been appointed a traveling freight and passenger agent, with office at Laurel, Miss.

Samuel P. Collier, Jr., division freight agent of the Atlantic Coast Line at Jacksonville, Fla., has been appointed traffic manager of the Winston-Salem Southbound, a new line being built jointly by the Atlantic Coast Line and the Norfolk & Western, from Winston-Salem, N. C., to Wadesboro, 88 miles.

B. H. Stephens, general agent of the Trinity & Brazos Valley at Dallas, Tex., has been transferred to Corsicana, Tex., and E. E. Peacock, who resigned as commercial agent at Dallas a few months ago, has been reappointed to that position, succeeding to the duties of Mr. Stephens. Nat H. Hall, soliciting freight agent at Galveston, has been appointed a commercial agent, with office at Galveston. J. E. Murphy succeeds Mr. Hall.

Engineering and Rolling Stock Officers.

E. S. Heyser has been appointed roadmaster of the Third division and the Hidalgo branch of the St. Louis, Brownsville & Mexico, with office at Kingsville, Tex., succeeding W. J. Carnohan.

J. W. Storrs has been appointed consulting engineer of the Montpelier & Wells River, with office at Concord, N. H. Mr. Storrs will have full supervision of construction and maintenance of bridges.

J. J. Dewey, master mechanic of the New York division and branches of the Erie Railroad, at Jersey City, N. J., has resigned to become superintendent of machinery of the American Laundry Machinery Manufacturing Co., with headquarters at Rochester, N. Y.

M. A. Kinney, master mechanic of the Hocking Valley at Columbus, Ohio, has been appointed superintendent of motive power, with office at Columbus, succeeding G. J. De Vilbiss, deceased. P. G. Leonard has been appointed road foreman of engines, with office at Columbus, succeeding L. C. Engler, deceased.

C. L. McIlvaine, assistant engineer of motive power of the Buffalo division of the Pennsylvania Railroad, at Buffalo, N. Y., has been appointed assistant engineer of the Erie division of the Pennsylvania Railroad and the Northern Central, with office at Williamsport, Pa., succeeding J. L. Cunningham, promoted. Paul L. Grove, assistant master mechanic at the Altoona shops, succeeds Mr. McIlvaine, with office at Buffalo.

Purchasing Officers.

E. E. Bashford, assistant secretary of the National Railways of Mexico at New York, has been appointed general purchasing agent, with office at Mexico City, Mexico, succeeding J. H. Guess, resigned.

OBITUARY.

Donald P. Stubbs, general agent of the Union Pacific at Cleveland, Ohio, a son of John C. Stubbs, vice-president and director of traffic of the Harriman Lines, died September 27 at Cleveland.

J. G. Parker, secretary of the New York, New Haven & Hartford, at New Haven, Conn., died September 27. Mr. Parker was in the service of the New York, New Haven & Hartford for many years, having been private secretary to former President Charles P. Clark, and was made secretary of the company after Mr. Mellen became president.

Samuel F. Parrott, receiver of the Atlanta, Birmingham & Atlantic and the Macon & Birmingham, also president of the Atlantic Compress Co., died September 26 in Atlanta, Ga., after a long illness. Mr. Parrott resigned as vice-president and general manager of the Georgia, Southern & Florida in July, 1908, to become president of the Atlantic Compress Co. He was appointed permanent receiver of the Atlanta, Birmingham & Atlantic in March, 1909.



C. E. E. Ussher.

Railway Construction.

New Incorporations, Surveys, Etc.

ATCHISON, TOPEKA & SANTA FE.—Grading is in progress on nearly all of the 310-mile cut-off which the Santa Fe is constructing between Texico, N. Mex., and Coleman, Tex. The plans for making Sweetwater the division point on the new line have been prepared and arrangements are being made for the commencement of construction work upon the large machine and car shops and other buildings that are to be built at Sweetwater. It is announced that the Santa Fe will spend approximately \$2,000,000 for improvements at Sweetwater.

ATLANTIC NORTHERN & SOUTHERN.—An officer writes that a grading contract has been let to Shugert & Barnes Bros., Des Moines, Iowa, and that other contracts are to be let by October 10. Work is now under way from Atlantic, Iowa, south via Grant to Villisca, 38 miles. There will be about 40 short trestles. The company now operates a line from Kimballton, south via Elkhorn to Atlantic, 17 miles. H. S. Rattenborg, president; C. B. Judd, chief engineer, Atlantic. (July 22, p. 173.)

BUFFALO, ROCHESTER & PITTSBURGH.—This company is planning to make a number of improvements along the line. The Silver Lake Railway, operating a line from Silver Spring, N. Y., to Perry, seven miles, has been acquired and is to be improved. The work on nine miles of double-track, including grade and line revision between Newton, Pa., and Mount Jewett, is nearing completion.

CANADIAN NORTHERN.—Work has been started by the C. J. Johnstone Co., Seattle, Wash., it is said, on a line between Vancouver, B. C., and Matsqui.

CANADIAN PACIFIC.—The report of this company for the year ended June 30, 1910, shows that the company has 471.4 miles of new line under construction on which work is now under way, as follows:

Ontario Division	
Name.	Miles.
Tilsonburg, Lake Erie & Pacific: Code Junction, Ont., to Ingersoll...	4.8
Georgian Bay & Seaboard: Cold Water, Ont., to Atherley.....	17.8
Central Division.	
Stonewall Branch: Komarno, Man., north to Icelandic river.....	28.4
Virden Branch: Virden, Man., northwest to McAuley.....	14.0
Souris Branch and Extension: Tilston, Man., westerly.....	24.0
Western Division.	
Moose Jaw Branch: Outlook, Sask., to Macklin.....	147.7
Bulyea Branch: Regina, Sask., to Bulyea.....	42.7
Colonsay Branch: Craven, Sask., to Colonsay.....	112.0
Weyburn Westerly: Forward, Sask., westerly.....	25.0
Kinmore Northeast: Irricana, Alb., easterly.....	15.0
Crow's Nest Pass: Mile 28 to Mile 58 in Alberta.....	30.0
Pacific Division: Vancouver, B.C., and Lulu Island, Eburne Exten..	10.0
Total	471.4

A charter has been secured by the Kootenay Central to build from a point near Galloway, B. C., on the Crow's Nest Line, to Golden, on the main line, 175 miles. Arrangements have been made with this company for the construction of the railway in sections of such lengths and within such periods of time as may be determined hereafter, and when completed the new line is to be leased to the Canadian Pacific for 999 years.

CENTRAL RAILROAD OF NEW JERSEY.—The report of this company for the year ended June 30, 1910, shows that the sum of \$4,000,000 has been appropriated as a fund for additions and betterments to cover in part the cost of proposed reconstruction and elevation of drawbridges in New Jersey over the Hackensack and Passaic rivers and of the approaches; new piers at Jersey City, N. J.; new equipment building at the company's shops and contracted for; installation of interlocking systems at various points; new engine terminals at Ashley, Pa., and Scranton; new signal bridges; grading and additional yard tracks at Jersey City, and other additions and betterments. The following improvements have been authorized to be carried out during the coming year: Improving the express and station facilities; a covered lighterage pier No. 11; new open front pier No. 12, and cattle pier No. 14, all at Jersey City; renewal of bridge No. 19 at Bayonne; renewal of bridge No. 136 at Hampton; change of alinement on the main track at Glen Onoko, Pa.,

and new engine terminal at Red Bank, N. J.; relocation of turnpike at Mauch Chunk, Pa.; extension of track No. 6 from Garwood, N. J., to Westfield; also extension of track from Lorraine to Cranford.

CHESAPEAKE & OHIO.—The report of this company for the year ended June 30, 1910, under date of September 15, shows that during the year the Coal River Railway added 5.8 miles and an extension of 0.7 mile was finished on the Paint Creek branch. Further extensions of 11.4 miles of the Coal River Railway and 14.1 miles of the Raleigh & Southwestern are now in progress; also, an extension of the Guyandot Valley branch, 21.4 miles. These extensions are for the purpose of further development of the timber and coal tonnage and it is expected will be finished and put in operation during the fiscal year 1911. This company completed second-track work, including revision of line and grade from Lee Hall, Va., to Grove, 4.5 miles; Greenway to Gladstone, five miles, and St. Albans, W. Va., to Barboursville, 27.8 miles. Second track work from Gladstone, Va., to Riverville, four miles; Walker to Providence Forge, six miles, has been finished since the close of the year. Second-track work from Providence Forge to Elko, 9.2 miles; Korah to Westham, 2.7 miles, and Fort Spring, W. Va., to Rockland, 2.1 miles, it is expected will be finished before the close of 1910. In addition, second-track work aggregating 67 miles, is in progress on the Cincinnati division. The greater part of this is expected to be put in operation during 1910. Upon the completion of second track now under construction the line from Newport News, Va., to Cincinnati, Ohio, will have two tracks, with the exception of nine miles in West Virginia and 48 miles in Kentucky. It may be necessary to double-track the 48 miles in Kentucky during 1911 if the present volume of traffic continues. See report of this company elsewhere in this issue.

CHICAGO & NORTH WESTERN.—The report of this company for the year ended June 30, 1910, shows that the following companies have been organized in the interest of the C. & N. W.:

Lee County Railway.—This company has completed a double-track line from Nachusa, Ill., to Nelson, 12.76 miles.

Bellefourche Valley.—Organized to build from a connection with the C. & N. W. at Bellefourche, S. Dak., thence through the counties of Butte and Meade for 88 miles; 23.52 miles have been finished.

James River Valley & Northwestern.—Organized in South Dakota to build from Gettysburg, S. Dak., to Blunt; also from Onida to Hitchcock, in all about 130 miles. The line from Gettysburg to Blunt, 39.55 miles, is about finished and about all the right-of-way for the line between Onida and Hitchcock has been secured.

Sioux City, Dakota & Northwestern.—Organized in Iowa to build from Sioux City, Iowa, to Hawarden. Work is well advanced from a connection with the Illinois Central near Hinton to the C. & N. W. near Hawarden, 28.17 miles, and an agreement has been entered into between the Illinois Central and the C. & N. W. providing for perpetual trackage rights over the main line of the Illinois Central between Sioux City and Hinton, 12.72 miles.

Des Plaines Valley.—Organized in Illinois and has secured about all the right-of-way for a double-track line from a point between Northfield, Ill., and Blodgett, on the Western division of the C. & N. W. to a connection with the Wisconsin division near Des Plaines, thence to the Galena division at Proviso, 21 miles. This line will directly connect the several divisions of the C. & N. W. entering Chicago with the proposed enlarged terminal yards at Proviso.

Milwaukee, Sparta & Northwestern.—Organized in Wisconsin to build from the C. & N. W. near Lindwurm, Wis., which is about eight miles north of Milwaukee, northwest to Sparta, on the Madison division, 169.52 miles; also to build from a connection with the above line at a point about six miles west of Lindwurm, southerly to a connection with the Milwaukee and Madison line near West Allis, 8.16 miles; from Lindwurm to Clyman, and from the junction west of Lindwurm to near West Allis, in all about 51.78 miles, and work is under way on a double-track line. From Clyman to Necedah, and from Wyeville to Sparta most of the right-of-way has been secured and the construction of a single-track line has been started. Between Necedah and Wyeville an existing branch will be reconstructed and used as part of the main line. Provision is also

to be made for the future construction of an additional main track from Clyman to Sparta. This line will afford a direct route with low grades from Milwaukee to connections with the Chicago, St. Paul, Minneapolis & Omaha at Wyeville and the C. & N. W. at Sparta. It will also provide a double-track belt line around the city of Milwaukee.

Satisfactory progress has been made on the company's new passenger terminal and approaches in Chicago. The company has undertaken the elevation, to a maximum height of 17½ ft., of its roadway and main tracks in Chicago, from a connection with the Rockland street line, at Tyler street, to Leavitt street, 0.81 mile. On the Milwaukee line satisfactory progress has been made on the elevation of the main tracks through the city of Evanston, Ill. This work is expected to be finished soon.

In the village of Oak Park, adjoining Chicago at its western limits, the four northerly tracks of the proposed six-track system have been elevated from Austin avenue to Clinton avenue, 1.22 miles. The bridge work has been erected for the subways and the street improvements are about finished, as well as the Harlem avenue freight yard, including the construction of a brick freight house. In the city of Milwaukee, Wis., the elevation of the main tracks from near Chicago avenue to Greenfield avenue, 1.62 miles, including the elevation of the Barclay street and Chase yards, containing 6.55 miles of track; the reconstruction of the Kinnickinnic river drawbridge and the construction of four subway bridges, also a brick freight station and team yard at Lincoln avenue, have been completed. The important additions and betterment work includes third track on the Mayfair cut-off, from Foster street, Evanston, to Weber station, 2.52 miles, which is about finished. The Fulton, Ill., cut-off consisting of third and fourth main tracks, from the main line of the Galena division, three miles east of Fulton, to the east end of the company's new bridge over the Mississippi river, between East Clinton and Clinton, Iowa, 4.69 miles, and the revision of the main line of the Nebraska and Wyoming division between Thatcher and Valentine, Neb., including the construction of a cut-off, 5.73 miles, south of the present main line between these places and the construction of a 1,300-ft. bridge over the Niobrara river, has been finished. Second main track has been constructed on the Galena division from near West Chicago to a point west of Wayne, Ill., 4.74 miles. A total of 60.57 miles of yard tracks, sidings and industrial spurs have been added during the year. A second main track is being constructed and the present main line is being revised between Hawarden, Iowa, and the junction with the Sioux City, Dakota & Northwestern, about two miles east of that station. Land has been bought for the extension and enlargement of the company's station and terminal facilities at Proviso, Ill., and Tracy, Minn. Near Fulton, Ill., the company has secured 201 additional acres of land and has commenced the construction of a large terminal yard. See report of this company elsewhere in these columns.

CHICAGO, MILWAUKEE & ST. PAUL.—The report of this company for the year ended June 30, 1910, shows that the company is carrying out improvements to include additional second-track on the following lines: La Crosse division, from Camp Douglas, Wis., west to West Salem, about 44 miles; on the River division, from Wabasha, Minn., southeast to Richmond, about 46 miles; on the Prairie du Chien division, from Elm Grove, Wis., to Blue Mound Junction, about seven miles. During the year work on the reduction of grades and improvement of alignment was carried out at various places.

CHICKASHA, ARDMORE & LAWTON.—According to press reports from Guthrie, Okla., financial arrangements have been made to build a line from Ardmore, Okla., northwest to Chickasha, with a branch to Lawton, in all about 150 miles. O. O. Ayers is president.

DENVER, LARAMIE & NORTHWESTERN.—A contract has been given to J. B. Orman & Co. to build a 42-mile extension, it is said, from Greeley, Colo., northwest via Severance to Scott. It is expected that the section to Severance, 12 miles, will be finished by December 1, and to Scott by April, 1911. The line is eventually to be extended further northwest. (Sept. 2, p. 440.)

GALVESTON-HOUSTON (ELECTRIC).—This company, building an electric line from Houston, Tex., southeast to Galveston, 50 miles, recently started track laying at Lamarque. It is said that 120,000 ties and 5,700 tons of rail are stored in the yards

near Texas City Junction, ready to be transported to the several portions of the line. Shell ballast is being delivered at the rate of 500 cu. yds. each day, 120,000 cu. yds. being contracted for the entire right of way. Hardy & Ford, contractors, are grading the upper 19 miles, and will complete their work on contract time, October 1. It is expected that J. C. Kelso, grading the lower 16 miles, from Clear creek to a point within two miles of the causeway, will have the 16 miles section finished about the same time. The two miles of grading between the causeway and the first section and the two-mile stretch between the upper end of the work, being done by Hardy & Ford, and the Houston city limits, have not been let, and probably will not be until the completion of the main stretches. (April 15, p. 1015.)

HAMMOND, CHICAGO HEIGHTS & SOUTHERN TRACTION.—An officer writes that work is expected to be started in the spring of 1911. The company was organized to build from a point near Hammond, Ind., southwest to Chicago Heights, thence to St. Anne, in Kankakee county, Ill., in all about 50 miles. W. S. Reed, president, First National Bank building, Chicago, and A. Van Steenburg, secretary, Lansing, Ill.

HUMBOLDT & EASTERN.—An officer writes that at the present time the company is locating a line from Good's Pass, Cal., to Humboldt bay, and it is the intention to keep a surveying party in the field as long as the weather will permit. The company was organized last year to build about 175 miles of line in California. E. E. Skinner, secretary, 318 Fifth avenue, Eureka.

INTERNATIONAL RAILWAY OF NEW BRUNSWICK.—According to press reports, the line under construction for the past two years from Campbellton, N. B., on the Baie des Chaleurs, southwest to St. Leonard, on the St. Johns river, 110 miles, is nearing completion and will be opened for traffic soon.

IOWA & SOUTHWESTERN.—This company is building 38 miles of line from Atlantic, Iowa, south to Villisca, and is also building 18 miles of line from Clarinda, via College Springs, to Blanchard. The contract for all the work has been let to the Engineering Construction & Securities Co., Chicago. The grading has been sublet to Shugart & Barnes Brothers, Des Moines. C. B. Judd, chief engineer, Clarinda. (Jan. 21, p. 164.)

KOOTENAY CENTRAL.—See Canadian Pacific.

LEHIGH & NEW ENGLAND.—Right-of-way is said to have been secured for an extension from Danielsville, Pa., near Slatington, west to Tamaqua, 31 miles. The cost of the extension will be about \$3,000,000.

LEXINGTON & EASTERN.—According to press reports, all the right-of-way has been secured and it is said contracts for building an extension will be let October 1. The plans call for a line from Jackson, Ky., up the north fork of the Kentucky river, through the Elkhorn and Boone's fork coal fields in Letcher county, thence to a connection with the Chesapeake & Ohio's Big Sandy branch near the Brakes, 115 miles. The entire line will traverse a coal and timber section. It is the intention to have the line finished and in operation within two years. (Sept. 9, p. 483.)

LONG ISLAND RAILROAD.—This company has accepted the proposition made to it by the city of New York with reference to the elimination of grade crossings, also for the improvement of the Jamaica station. This work includes the closing of certain streets and laying out other streets, as well as a change of the grades of streets. A part of the expense is to be paid by the city. In view of the acceptance by the Long Island of this proposition, it is expected that action will be taken soon by the Board of Estimate and Apportionment so that the work can be carried out. The agreement provides among other things for the elimination of all grade crossings on the existing line between Winfield and Jamaica avenues near Dunton; on the Montauk division through Richmond Hill; on the main line, Montauk and Atlantic divisions through a portion of Jamaica; the construction of a new line between Woodside and Winfield, to be known as the Woodside-Winfield cut-off, and putting in additional tracks. The facilities at Jamaica for handling passengers and freight are to be extended and some of the bridges on the main line are to be extended or lengthened and a number of new bridges put in. (April 15, p. 1016.)

LOUISVILLE, LINCOLN FARM & MAMMOTH CAVE TRACTION.—Bids are being asked, it is said, for building from Mammoth Cave, Ky., southeast to Glasgow, also to Lincoln Farm and Hodgenville. C. Van-den-Burgh, general manager, Glasgow, and H. H. Snyder, chief engineer. (July 22, p. 174.)

MEXICAN ROADS.—President Diaz, in a recent message to Congress, said that the railways under federal jurisdiction have added 148 miles of new line since April last and those railways now aggregate 12,225 miles. In addition, there are 3,000 miles of railway subject to the jurisdiction of the states, making a total of 15,225 miles of railway in Mexico.

MORGAN'S, LOUISIANA & TEXAS.—See Southern Pacific.

MISSOURI PACIFIC.—An extension of the Wichita-Kiowa branch, from Kiowa, Kan., west to Hardtner, 10.4 miles, has been opened for freight and passenger service. (Aug. 12, p. 294.)

An officer is quoted as saying that the company plans to make improvements and betterments during the next 10 years, if it can borrow the money at reasonable interest, to cost \$60,000,000.

NEW YORK CENTRAL & HUDSON RIVER.—Preliminary steps are being taken by this company to electrify the Auburn road from Syracuse, N. Y., west to Geneva, 51.45 miles.

See an item in General News regarding improvements to be carried out by this company.

NEW YORK, ONTARIO & WESTERN.—An officer writes that double-track work is being carried out on the Scranton division between Cadosia, N. Y., and Starlight, Pa., eight miles, and between Preston Park and Pleasant Mount, 13.5 miles. The McDonald Construction Co., Scranton, Pa., has a grading contract for work on 13 miles. The railway company will carry out the rest of the work with its own forces, including all the track laying and ballasting. Nothing has yet been determined regarding the bridges on this section. (Sept. 23, p. 559.)

NEZ PERCE & IDAHO.—Surveys are being made for an extension, it is said, from Vollmer, Idaho, to Forest, and it is expected to begin construction work as soon as surveys are finished. Capital has been secured to build the extension. Z. A. Johnson, president and general manager, Nez Perce. (Jan. 14, p. 114.)

READSTOWN & VIROQUA.—Under this name a company is being organized by capitalists of La Crosse, Wis., to build a line from Readstown north to Viroqua, 15 miles. It is expected that plans will be sufficiently advanced to begin construction work early in the spring.

SILVER LAKE RAILWAY.—See Buffalo, Rochester & Pittsburgh.

SOUTHERN PACIFIC.—According to press reports, a contract has been given to Ericson & Peterson, San Francisco, Cal., to build about 100 miles of line from Fernley, Nev., northwest through Washoe county, Nev., to a point in Lassen county, Cal., via Susanville. The line is eventually to be extended into Oregon. The same contractors are now at work on a line for the Southern Pacific in Placer county, Cal. (Aug. 26, p. 373.)

An officer of Morgan's Louisiana & Texas writes that all the road has been built and track laid but not entirely surfaced from the main line at Lafayette, La., which is 145 miles west of New Orleans, northeast to Port Allen, opposite Baton Rouge. The company will use the St. Louis & San Francisco car ferry across the Mississippi river to a point opposite the terminal, thence the Yazoo & Mississippi Valley tracks to Baton Rouge. This new line will be a connecting link from the Southern Pacific to the Illinois Central lines. (Sept. 23, p. 559.)

Preparations are being made to lay a second main track at a number of points between Suisun and Benicia, Cal., with a view to making the line double track throughout the distance from Sacramento to Benicia. From Port Costa (across the river from Benicia) to Oakland, the line is double track already. Fifty carloads of 90-lb. rails have arrived at Benicia. This division already has very long passing tracks at the stations. The capacity of this division is also to be increased by enlarging the ferry facilities. There will be new slips at the ferry terminals, and the big boat Solano is to be supplemented by a second boat, the plans and specifications for which have already been drawn.

TEXAS ROADS.—The Tyler Commercial Club has received a proposition from the J. L. Wortham Construction Co., Beaumont, Tex., to build from Tyler north to Paris, about 100 miles, for a cash bonus of \$300,000 when the road is completed. The question of building the line is now under consideration. J. L. McBride is secretary of the Tyler Commercial Club.

TOPEKA & NORTHWESTERN.—See Union Pacific.

UNION PACIFIC.—The Topeka & Northwestern, it is understood, will be opened for through traffic from Onaga, Kan., northwest to Marysville, 32.44 miles, about November 1.

WINSTON-SALEM SOUTHBOND.—It is expected that trains will begin operating over this line about December 1. The route is from Winston-Salem, N. C., south to Wadesboro, 88 miles. The line is being built jointly by the Atlantic Coast Line and the Norfolk & Western. O. H. P. Cornell, chief engineer, Winston-Salem. (July 8, p. 104.)

WISCONSIN & SOUTHWESTERN.—Incorporation has been asked for in Wisconsin, with \$200,000 capital, to build from Woodman, Wis., northeast to Bloomington, 23 miles. The incorporators include: W. H. Cash, New London; E. Hammer, J. A. Cash, Hillsboro; C. E. Coon, C. J. Chapman and W. D. Crist, Omaha, Neb.

ZINC BELT RAILWAY.—According to press reports, this company has been granted a charter in Oklahoma, with \$50,000 capital and office at Davis, Okla. The plans call for a line from Davis, west to Lawton, about 80 miles. G. Sober, R. C. Hope, T. H. Slaver, A. O. McCord and W. S. Lewis, all of Davis, are directors.

FOREIGN RAILWAY NOTES.

On the 15th of August the well-known establishment of Henschel & Son, in Cassel, completed its 10,000th locomotive. That day was also the 100th anniversary of the founding of the works. In the early days it did not build locomotives.

Referring to the construction of new railways in the Odessa district of Russia, the British vice-consul at Mariupol states that fair progress is being made with the Northern Donetz line, and that a portion—from Izum to Slaviansk—has been opened for freight traffic. Several other railways are projected, the most important of which is a line from Saratov to Millerowo on the southwestern line, thence to Schterovka on the Ekaterina line, and from there down to Mariupol. This would greatly reduce the distance between the Volga and the Azov, would open out immense tracts of fertile land, and much grain grown in Siberia would then also find its way to this port. To derive full benefit from this line, however, the port of Mariupol would have to be deepened, enlarged and brought up-to-date with necessary appliances for the rapid handling of cargo. Another project is a line from the Rozovka station, on the second Ekaterina line, to Taganrog, which would greatly reduce the distance between Taganrog and Mariupol.

The Yunnan Railway, extending from the port Haiphong in French Tongking northwestward 531 miles to Yunnan, the capital of one of the southernmost provinces of China, was opened through April 1 last. This line was begun in 1902, reached the Chinese border at Laokay, 141 miles, in 1906; and thence has met with great difficulties, partly in the nature of ground, and partly in the deadly climate of the Namti valley, though Yunnan itself is some 6,500 ft. above sea level. The cost, which had been estimated at about \$18,000,000, has mounted to \$32,000,000, or more than \$60,000 per mile for a meter-gage line. The country through which it passes is largely isolated from any navigable streams, but is not so productive as most parts of China. It has some coal, copper and tin mines, which English investigators have not thought to be particularly valuable. A large part of the country is wild and mountainous. What traffic it has, however, is pretty well assured to the new line. Surveys for an English line, from the southwest to Yunnan, have proved that it would be exceedingly costly, with little on the route to support it. Yunnan has been one of the leading producers of opium. This being now forbidden, Indian corn is taking its place, yielding a freight many times as heavy, but which cannot bear high rates.

Railway Financial News.

BALTIMORE & OHIO.—The property of the Berkeley Springs & Potomac was sold under foreclosure on September 24 and was bid in by the Baltimore & Ohio. The Berkeley Springs & Potomac runs from Hancock, Md., to Berkeley Springs, W. Va., six miles, and the entire stock of the old company was owned by the Baltimore & Ohio. The sale is a formality under a decree of the court in order to perfect the title.

BOSTON & MAINE.—See Vermont Valley Railroad.

BUFFALO, ROCHESTER & PITTSBURGH.—This company has bought the property of the Silver Lake Railway. The road runs from Silver Springs, New York, to Perry, seven miles.

CANADIAN NORTHERN.—The Canadian railway commission has been asked to grant permission to the Canadian Northern to take over the Edmonton & Slave Lake and to operate it as part of its road. The Edmonton & Slave Lake \$420,000 5 per cent. bonds were bought in 1907 and 1908 by the Canadian Northern and deposited as part of the collateral for Canadian Northern 4 per cent. perpetual consolidated debenture stock.

CENTRAL OF NEW JERSEY.—Henry Graves, Jr., and E. T. Stotesbury have been elected directors, succeeding H. McK. Twombly and Joseph S. Harris, both deceased.

CHESAPEAKE & OHIO.—A complaint has been filed in the circuit court of Indiana by the state prosecuting attorney asking the dissolution of the Chesapeake & Ohio of Indiana, on the ground that through the formation of this company by men interested in the Chesapeake & Ohio Railway, an attempt had been made to evade the Indiana state law, which it is claimed would have prevented the Chesapeake & Ohio Railway Co. itself from buying in at foreclosure sale the property of the Chicago, Cincinnati & Louisville, now owned by the Chesapeake & Ohio of Indiana. The suit was brought in connection with the filing by the Indiana company of a mortgage for \$40,000,000 under which there was to be issued about \$8,000,000 bonds. Apparently the suit was brought under a misapprehension as to the amount of bonds to be issued.

CHICAGO, INDIANAPOLIS & LOUISVILLE.—Adrian Iselin, Jr., president of the Buffalo, Rochester & Pittsburgh, has been elected a director of the Chicago, Indianapolis & Louisville, succeeding Ira G. Rawn, deceased.

CHICAGO, MILWAUKEE & ST. PAUL.—Stanley Field has been elected a director, succeeding Fredrick Layton, who refused re-election.

DELAWARE & HUDSON.—The New York Public Service Commission, Second district, has authorized the company to buy 500 shares of the Greenville & Johnsonville Railway, at not more than par. The D. & H. owned 1,750 shares of the stock of this electric railway before the passage of the Public Service Commission law and the 500 shares that are now to be bought are the total minority not owned by the D. & H.

DETROIT, TOLEDO & Ironton.—Judge Swan, of the United States District Court, has confirmed the validity of \$5,000,000 bonds of the D., T. & I., which were issued in connection with the purchase of control of the Ann Arbor.

EDMONTON & SLAVE LAKE.—See Canadian Northern.

INTERNATIONAL & GREAT NORTHERN.—Governor Campbell, of Texas, is quoted as saying that Texas needs such a line as the International & Great Northern. The only thing, he said, standing in the way of the purchase of this property when it is sold at foreclosure sale on October 6 is the fact that the state would need about \$30,000,000 to make such a purchase.

MOBILE, JACKSON & KANSAS CITY.—The eighth and final installment of the assessment of \$2.50 per share on the stock of the Mobile, Jackson & Kansas City and the Gulf & Chicago has been called for payment on September 30 under the modified reorganization plan dated October 1, 1908.

PITTSBURGH, WHEELING & KENTUCKY.—A dividend of 3 per cent. has been declared payable October 1, and a special dividend

of 3 per cent. out of accumulated surplus has also been declared. This company is a subsidiary of the Pittsburgh, Cincinnati, Chicago & St. Louis.

QUEBEC & LAKE ST. JOHN.—Over 90 per cent. of the first mortgage and income bonds have been deposited with the bondholders' protective committee, and the time for the deposit of the remaining bonds has been extended to September 30.

TERRE HAUTE, INDIANAPOLIS & EASTERN TRACTION.—The directors have declared an initial collateral dividend of 1¼ per cent. on the preferred stock, payable October 1, 1910.

UNION PACIFIC.—The company has sold abroad through Kuhn, Loeb & Co., New York, and Baring Bros., London, £1,500,000 (\$7,500,000) first lien and refunding mortgage 4 per cent. bonds. These bonds are part of an issue of \$200,000,000, of which \$57,000,000 are outstanding.

VERMONT VALLEY RAILROAD.—Lee, Higginson & Co., Boston, are offering at 104½, to yield about 4¼ per cent., the unsold portion of the total authorized issue of \$1,500,000 first mortgage 4½ per cent. bonds of 1910-1940. The bonds are secured by a mortgage on the 24-mile road between Belknap Falls, Vt., and Brattleboro, and on the equipment; and in addition, by the deposit of \$700,000 stock of the Connecticut & Passumpsic River Railroad and \$100,000 stock of the Massawippi Valley Railway, a total of \$800,000 stock, on which 6 per cent. dividends are guaranteed by the Boston & Maine. The road is operated by the Boston & Maine under an agreement providing for the payment of operating expenses, taxes, interest charges and 4 per cent. dividends on the \$1,000,000 stock by the Boston & Maine.

WABASH-PITTSBURGH TERMINAL.—In the suit brought by the Central Trust Co. of New York to foreclose the Wheeling & Lake Erie general mortgage, with its intervening petition of the New York Trust company to sell the collateral under the Wheeling \$8,000,000 notes, which consists of \$12,000,000 general mortgage bonds, a cross bill has been filed by the Wabash-Pittsburgh Terminal receivers attacking the validity of the Wheeling general mortgage.

WICHITA FALLS & WELLINGTON.—Application has been made to the Texas railway commission for permission to issue \$15,000 capital stock and \$285,000 first mortgage bonds, to be secured by a mortgage on the 15 miles of completed road running from Collingsworth to Wellington. This road is now ready to be put in operation.

FOREIGN RAILWAY NOTES.

The firm of Miani Silvestri, Comi & Grondona, of Milan, have taken an old locomotive and built on it a newly invented turbine steam engine, which is said to obviate those features of ordinary turbines which seem to make it impossible to use them for locomotives. If so, we shall soon hear more of it.

An agreement has been concluded between certain British banks and the Russian Minister of Finance, which provides for the construction of a network of railways in the Caucasus, according to a report by Consul Albert Halstead at Birmingham, England. The construction of these railways, it is said, includes the long-proposed line between Armavir and Touapse. It is understood that all the material used will be supplied by British concerns.

Three years ago the Prussian authorities recommended the organization of small gangs of track-hands, who should have special charge of keeping up joints and switches on the main tracks. The most intelligent and trustworthy men were selected for this purpose, and they are reported to have improved the condition of the track materially. Their duties are to see that every joint is properly drained, that no fastenings of joints or switches become loose; that the rails at a joint are always at the same level, and that there are no defects in joints and frogs. They also assist the larger gangs of ordinary trackmen in case of emergency. They receive a little higher pay than other trackmen.

Supply Trade Section.

The Westinghouse Air-Brake Company, Pittsburgh, Pa., has moved its Richmond, Va., and Cincinnati, Ohio, offices to Atlanta, Ga., the new address being Candler building.

The United States Metal & Manufacturing Company, Chicago, has moved its office from the Railway Exchange building to suite 1104-1105, McCormick building, Michigan avenue and Van Buren street.

The Strong, Carlisle & Hammond Company, Cleveland, Ohio, has received an order from the Bengal & Northwestern Railway of India for Randall graphite sheet lubricator for use on 200 cars.

A. R. Wight, assistant resident engineer of the South Australian Railways, Quorn, South Australia, wants catalogues of materials used in the engineering department of American railways.

Captain C. H. Smith, president of the Western Wheeled Scraper Company, Aurora, Ill., died at his home on Sunday last. Captain Smith was born in Hamilton county, New York, November 26, 1842, but spent his youth in Iowa. He was prominent in politics, being at one time an active gubernatorial candidate in his district.

The Isthmian Canal Commission will receive bids until October 17 for hose, packing, torpedoes, diaphragm pumps, hose strainers, valves, cocks, grease and oil cups, lubricators, engine gongs, flue ferrules, scales, machinists' clamps, flue cleaners, squilgees, headlight glass, carbide, drawing paper, cover paper, etc. (Cir. No. 607.)

Judge Landis, of the federal court, on September 21 appointed the Hibernian Banking Association receiver for the West Pullman Car Works, Chicago. Fears that the State Bank of West Pullman and the Browning Engineering Company, Cleveland, Ohio, would foreclose the property caused the petition for a receiver to be filed.

The Pittsburgh Testing Laboratory, Pittsburgh, Pa., has moved its New York office from No. 1 Liberty street to 50 Church street, and its interests in New York and in New England are now in the hands of Wm. F. Zimmermann, M.E., the second vice-president of the company. Mr. Zimmerman reassociated himself with the company last spring.

W. N. Matthews & Brother, St. Louis, Mo., have bought a controlling interest in the Davis Expansion Boring Tool Company, St. Louis. The stock bought formerly was held by Alexander Landau and A. E. Leussler. W. N. Matthews will be president and treasurer of the company; Emery E. Davis, vice-president, and Claude L. Matthews, secretary. The company's business will be increased and several new tools added to the line it handles, particularly an expansion reamer invented by Mr. Davis.

J. G. White & Company, Inc., New York, have been awarded a contract for the engineering and construction of a steam and electric power plant for the Power Transit & Light Company, Bakersfield, Cal. The building will be 82 ft. by 140 ft., with substructure of concrete, self-supporting steel frame and walls of metal lath and plaster, and designed to accommodate two 2,000-kw. horizontal turbines, with boilers, condensers, etc. A 750-kw. turbine will be temporarily installed at the earliest possible date. Water for condensing purposes will be obtained from an irrigation ditch near the plant, and the water for boiler purposes will be supplied from wells to be driven near the power house. As the boilers will be installed with oil burners, there will be no basement under the boiler room. The station will be designed electrically to deliver practically full load at either 60,000, 10,000 or 2,300 volts, and will operate at all the above pressures simultaneously. The estimated cost is approximately \$400,000. J. G. White & Company have also received a contract for erecting the railway shops of the New York, Ontario & Western at Mayfield, Pa.

RAILWAY STRUCTURES.

BURR OAK, ILL.—The Chicago, Rock Island & Pacific has let the contract to T. J. Leake & Co., Chicago, for building a new roundhouse.

BUTLER, PA.—The Butler Passenger Railway Co. may build a viaduct over the Baltimore & Ohio tracks on Center avenue, in Butler.

CHICAGO.—Reports that final arrangements for building the new union passenger station on Canal street have been made are denied by officers of the interested companies. Plans have been prepared and land secured, but the usual disagreements and obstacles to starting the work have prevented any definite announcement as to the date for beginning the work.

See Chicago & North Western under Railway Construction.

FT. WAYNE, IND.—The Pennsylvania has filed plans of a new passenger station to cost \$20,000. The plans for building a union station in Ft. Wayne, mentioned in the *Railway Age Gazette* of July 1, have been dropped.

JAMAICA, N. Y.—See Long Island Railroad under Railway Construction.

LENAPE, PA.—A contract has been given by the Philadelphia & Reading to D. W. Sperry, it is said, to put up a stone and frame passenger station at Lenape.

MARQUETTE, MICH.—The Duluth, South Shore & Atlantic has prepared plans for rebuilding the car shops recently destroyed by fire, and construction work will begin in a short time.

MAYFIELD, PA.—An officer of the New York, Ontario & Western writes that the company expects to carry out improvements at the Mayfield, Pa., yard, on the Scranton division, to include the following: A new 70-ft. turntable; 10-stall engine house; machine shop; carpenter shop; boiler house; store room and office; sand house and engine coal storage, together with an ash pit and additional tracks. J. G. White & Co., Inc., New York, have been awarded the contract for the erection of the railway shops. The buildings will be of brick and steel construction. The estimated cost is \$150,000.

NORTHEAST, PA.—The Buffalo & Lake Erie Traction will build a 90-ft. bridge, it is said, near Northeast.

OMAHA, NEB.—The Union Pacific has let the contract for the following buildings mentioned in the *Railway Age Gazette* of May 20: Mill, 90 ft. x 302 ft., brick and steel; five-stall brick engine house, 76 ft. 9 in. long; pony saw mill, brick, 24 ft. x 150 ft.; sub-store building, 16 ft. 6 in. x 40 ft. 8 in., brick; sub-store shed, 30 ft. x 115 ft., steel; two lumber sheds, 20 ft. x 248 ft., frame; sand blast and varnish remover building, 24 ft. x 40 ft., brick; dry kiln, 47 ft. x 58 ft., brick. Geo. B. Swift & Co., Chicago, is the contractor.

ROCHESTER, N. Y.—The Buffalo, Rochester & Pittsburgh contemplates improvements at its Rochester terminal, it is said, to cost more than \$300,000.

ST. LOUIS, MO.—The house of delegates has passed the bill submitted to it by the city council of St. Louis providing for the east side railway approach to the free bridge. The opposition to the bill was strong on the part of real estate men who argued that the approach suggested is a "plot" of the Terminal Association to "bottle up" the free bridge by locating the approach where no independent line can get to it. The bill received only 15 votes, the exact number required for its passage.

SWEETWATER, TEXAS.—See Atchison, Topeka & Santa Fe under Railway Construction. (Sept. 16, p. 523.)

SUNBURY, PA.—The York Bridge Co., who was recently given the contract for building the new county bridge over the Susquehanna river, to be used also by the Sunbury & Northumberland Electric Ry. Co., has given a contract for the reinforced concrete piers to W. H. Lyons, Sunbury. (Aug. 12, p. 297.)

WICHITA, KAN.—Local press reports quote railway officers as saying that the railways entering Wichita have agreed to build a union passenger station to cost \$200,000. No plans have been prepared.

Late News.

The items in this column were received after the classified departments were closed.

The Cleveland, Cincinnati, Chicago & St. Louis is said to have ordered 35 locomotives. This item is not confirmed.

The Wichita Falls & Northwestern has opened for operation an extension of the Panhandle division from Hollis, Okla., west to Wellington, Tex., about 25 miles.

L. F. Loree, president of the Delaware & Hudson, has been elected a director of the New York, Ontario & Western, succeeding Grant B. Schley, resigned.

The Louisiana Railway & Navigation Co. will put up a brick warehouse, it is said. The structure is to be 50 ft. long x 250 ft., on Liberty street, in New Orleans, La.

F. J. Lisman & Co., New York, have purchased from the reorganization committee of the Southern Indiana-Chicago Southern \$2,500,000 first and refunding 5 per cent. bonds to be issued by the new company.

Complaint has been filed with the Pennsylvania State Railroad Commission complaining against the Philadelphia & Reading because it is collecting fares in excess of 2½ cents per mile on lines running to Reading, Pa.

Cable advices to Kuhn, Loeb & Co., New York, say that the public offering of £1,500,000 Union Pacific first and refunding mortgage bonds in London, noted elsewhere in this issue, has been completely successful and that the subscription has been closed.

The Northern Pacific has completed the grade for a new line from Dawson, N. Dak., northwest to McClusky, in Sheridan county, about 60 miles. A line is also being run northwest from Turtle lake, in McLean county, which it is expected will end near Berthold.

Henry C. Osterman, of the Osterman Manufacturing Company, testified Wednesday in the Illinois Central graft case. He gave the history of the connections of the company with the Illinois Central officers, and testified as to the number of shares of stock sold and given to officers.

Supreme Court Justice Brady, of New York, who heard the application of New York for a temporary injunction restraining the New York Central & Hudson River from using dummy engines or steam locomotives on the streets and avenues below 30th street, along Tenth avenue, has denied the application.

A press despatch from Windsor, Ont., says that a Michigan Central train ran the 112 miles between St. Thomas and Windsor, on the Canada Southern division, in 92 minutes. The train which made the run is known as "No. 3," is made up of eight coaches, and is drawn by one of the new Pacific type of locomotives.

The second track on the Atchison, Topeka & Santa Fe's Illinois division between Chicago and Fort Madison is to be put in operation for passenger traffic Oct. 15, and most of the new double track of the Missouri division Nov. 1. Second-tracking elsewhere is being rushed, especially between Winslow, Ariz., and Ashfork, which section will be ready next spring.

Judge McCormick, of the United States Circuit Court, has issued an order postponing the sale of the International & Great Northern until the third Tuesday in May, after the legislature convenes. The postponement was granted on the application of the second and third mortgage bondholders and Receiver T. J. Freeman, representing the railway. In his order Judge McCormick refers to the so-called International & Great Northern law passed at the recent special session of the legislature. The order concludes with the statement that it is granted solely because the court is of the opinion that under the circumstances

and in view of the law a sale of the property at this time would be injudicious.

Secretary William H. Connolly has issued a call for the twenty-second annual convention of the National Association of Railway Commissioners to meet in the offices of the Interstate Commerce Commission on Tuesday, November 15. The notice said that new committees are to report at the forthcoming convention. Some of the more important committees to report are those on shippers' claims on common carriers, simplification of railway tariffs, rate and rate-making, uniform classification, railway capitalization, railway taxes and plans for ascertaining the fair value of railway property, and amendment of the act to regulate commerce.

In the freight rate hearing the Atchison, Topeka & Santa Fe submitted its budget for 1911 and 1912, which calls for the expenditure of \$66,000,000, as follows: Rights of way and station grounds, \$2,424,225; grade revision and lessening curves, \$5,473,639; bank protection, \$625,792; terminal yards, \$4,317,937; ballast, \$5,914,088; tracks, \$2,252,405; second track, \$15,627,314; bridges, \$3,488,209; track elevation, \$3,364,435; station building, \$4,685,174; shops, \$2,597,014; water and fuel stations, \$2,379,819; signals, blocks, etc., \$2,064,051; machinery and tools, \$550,000; new rails, \$6,047,492; tie plates, \$905,000; telephones and telephone lines, \$382,000; docks and wharves, \$1,450,000; roadbed work, \$1,000,000; total, \$66,500,664.

Complexities of Prussian Molasses Freight Rate.

Some of the complexities incident to making freight rates are illustrated by the experience of Prussia with what seems to us the simple substance molasses. Germany, it must be remembered, is a great sugar-producing country. It makes about 2,200,000 tons a year, and competes with France and Austria for the export trade. Regarding this as an infant industry which needed encouraging, for many years these countries granted drawbacks on sugar exported, which in effect became premiums, and at last seemed likely to destroy the market for cane sugar. By the Brussels sugar convention of 1903, an end was put to this system, since which time the German production has fallen off about 15 per cent.

Now molasses makes from 2 to 3 per cent. of the beets manufactured, and in the last year reported amounted to about 500,000 tons in Germany, as it came from the sugar refineries. The question is, what to do with all this molasses. There are special establishments which by processes not practicable at most refineries get a considerable amount of sugar from it, and these take more than half of the molasses. But since the Brussels convention sugar has been cheaper on the continent, and it is desirable (for the beet-sugar industry) that the stock should not be so increased; and, moreover, this re-refining has not been profitable recently. Another small part of the molasses, about 7 per cent., is used in distilleries. But of late a large and increasing part has been sold for cattle-feed. This was looked on as a solution of the problem. Cattle-feed was needed. Immense quantities of coarse grains are imported every year for this purpose. To encourage this use of molasses a special rate was made for it. That is, molasses to be used as cattle-feed was carried at a lower rate than molasses to be distilled, or to be re-refined.

The molasses is not usually fed raw to stock, but mixed with bran or meal. Now there are in the German market various kinds of mixtures of meals, oil cake, etc., advertised as having peculiar fattening power, but usually sold for a good deal more than their components cost. Since the reduction in the rate on molasses to be used as feed, the producers of these mixtures have in many cases sweetened their stuff with molasses, and then claimed the low rate. The stuff has been submitted to Dr. Schulz, chemist of the Laboratory of Tests, and he reports: That nothing should go at the reduced rate which is not at least 50 per cent. in weight molasses. Almost any bran or meal will absorb more than that and remain dry enough to handle and not stick to the troughs. And thus there may be a great consumption of an article which otherwise would tend to oversupply the sugar market and threaten the prosperity of the sugar-beet industry.

Equipment and Supplies.

LOCOMOTIVE BUILDING.

The *Tata Iron & Steel Company* has ordered two six-wheel switching locomotives from the *American Locomotive Company*.

The *Chicago Junction* has ordered five 20-in. x 28-in. cylinder six-wheel switching locomotives from the *American Locomotive Co.* in addition to the order placed as reported in the *Railway Age Gazette* of May 27. Two of the engines will be used on the *Chicago River & Indiana*.

The *Spokane, Portland & Seattle*, reported in the *Railway Age Gazette* of July 15 as being in the market for three ten-wheel locomotives, is said to have ordered 10 oil-burning passenger locomotives from the *Baldwin Locomotive Works*. This item is not confirmed.

CAR BUILDING.

The *Grand Trunk* is in the market for 10 sleeping cars.

The *Richmond, Fredricksburg & Potomac* is in the market for 25 box cars.

The *Hudson & Manhattan* is understood to be figuring on 40 steel subway cars.

The *Brinson Railway* is in the market for 100 thirty-ton wooden frame box cars.

The *Indian Refining Company* has ordered 69 tank cars from the *American Car & Foundry Company*. This equipment is for immediate delivery.

The *Cold Blast Transportation Company*, reported in the *Railway Age Gazette* of March 25 as in the market for refrigerator cars, expects to place an order within a few days for 400 to 500 steel underframe beef cars.

The *Dairy Shipper's Despatch*, reported in the *Railway Age Gazette* of August 12 as figuring on refrigerator cars, advises that probably no action will be taken on this order until spring. It is the intention to eventually order 100 cars.

The *Duluth, Missabe & Northern* is having 25 refrigerator cars built by the *Peteler Car Company*. The cars are of the *Moore* patent, 36 ft. long, and of 30 tons capacity. This company is also in the market for two baggage-mail cars.

The *Pennsylvania Lines West*, mentioned in the *Railway Age Gazette* of September 23 as figuring on freight equipment, has inquiries with the car builders for 120 box, 20 hopper and 10 flat cars. It is understood that this equipment is for the *Cleveland, Akron & Columbus*.

IRON AND STEEL.

The *Michigan Central* is in the market for 500 tons of bridge steel.

The *Long Island* is in the market for 12,000 tons of structural steel.

The *Chicago & Western Indiana* is in the market for 2,000 tons of bridge steel.

The *Pennsylvania* has ordered 800 tons of bridge steel from the *Phoenix Bridge Company*.

The *Erie* is in the market for 600 tons of bridge steel for use in a bridge at *Paterson, N. J.*

The *New York, New Haven & Hartford* has ordered 7,000 tons of bridge steel from the *Boston Bridge Company*.

The *Florida East Coast* has ordered 7,000 to 8,000 tons of shapes and plates from the *American Bridge Company*.

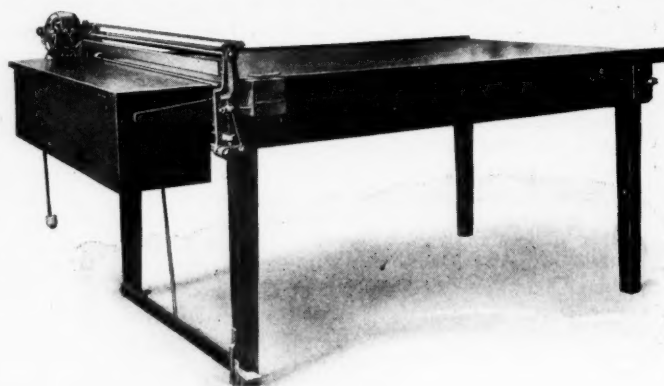
The *Chicago, Milwaukee & St. Paul* has ordered an additional 5,500 tons of rails from the *Illinois Steel Company*.

The *Lake Shore & Michigan Southern* has ordered 900 tons of bridge steel from the *Pennsylvania Steel Company* for use in a lift bridge at *Cleveland, Ohio*. See *Railway Age Gazette*, August 26.

General Conditions in Steel.—Notwithstanding the assurances of Chairman Gary, it is admitted that the steel trade is not in good shape, not from an inherent weakness in the industry itself nor general business conditions, but rather due to the policy of the railways, by whom little buying is being done. Reports say that prices are being shaded by the independent steel producers, at least in those cases where the business is to be secured by so doing, and that where prices are being maintained, it is because the amount of business to be secured is not sufficient to justify the effect of the cut. A large volume of prospective railway business is reported, but it is not expected to reach the markets before the latter part of November.

Blueprint Trimming Table.

A great deal of time is lost in drafting offices in the cutting of paper and tracing cloth into sheets, owing to the fact that this material comes in rolls. In an office employing a number of men a mechanical appliance for doing this cutting is indispensable. The *C. F. Pease Company, Chicago*, has lately placed on the market a table which is here illustrated. It is provided



Pease Blueprint Trimming Table.

with parallel clamp operated by a foot treadle which holds the paper or tracing cloth securely while the revolving cutting knife is used. The knife is driven by a motor and will cut five to ten sheets, being rotated mechanically and without friction against the plate or the material that is being cut. Both hands of the operator are free to handle the material as the knife once started in operation works independently. The top of the table is divided by lines into inch spaces and has figures along the edge so that any size sheet can be readily cut. A sizing diagram can also be provided for the top of the table so that any size sheet may be cut without a calculation being first performed. Baskets are furnished at the end when desired, instead of the light proof box shown in the illustration.

Western Air Dump Cars.

The *Atchison, Topeka & Santa Fe* recently purchased 100 20-yard air dump cars from the *Western Wheeled Scraper Company, Aurora, Ill.*, and about two-thirds of them are in use on the construction of a second track near *Chillicothe, Ill.* The air dump car has been in successful operation for contractors' use for a number of years, and, to a greater or less extent, by railways directly. The satisfaction given by this type of dump car led to the demand for one of larger capacity than was heretofore thought practicable, and the 20-yard car was designed to meet the demand for railway use. It is of 80,000-lb. capacity and built to conform to *M. C. B.* requirements.

The dumping device consists of a cylinder and a set of levers, chains, shafts and cams for each side. The thrust of the cylinder-rod acts on the lever which transmits the motion to a shaft through a chain operating over a cam. On the same shaft are two other cams to which the dumping chains are attached, the upper ends of the dumping chains being fastened to the outer angle sills of the bed. The action of the lever causes the shaft to rotate, drawing the bed down to the dumping angle. The return of the bed to carrying position is accomplished by a similar action of the device on the opposite side of the car.

The operation of the dumping and righting of the cars is con-

trolled by the engineer through a special four-way valve and requires but a few seconds of time. It will be seen that this method is a vast saving in both labor and time over the use of unloading plows or hand shovelers. The amount of air required for dumping the car is very largely dependent on the

becomes a rail base extension, and in tests has shown great holding power against movement of the rail. The wedge, being made of malleable iron, will not nick the base of the rail, although binding the rail and plate together firmly. The continuous bottom rib, shown in the bottom view, excludes moisture and pre-



Western Air Dump Cars After Application of Air.

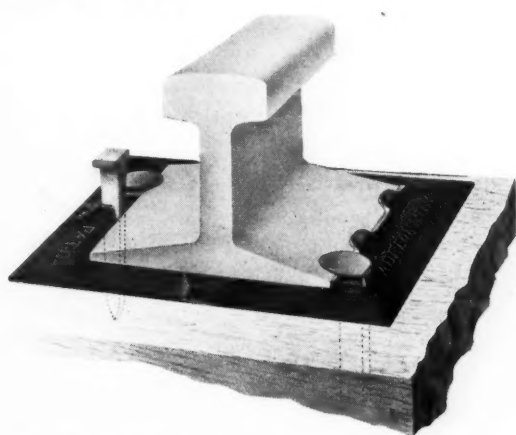
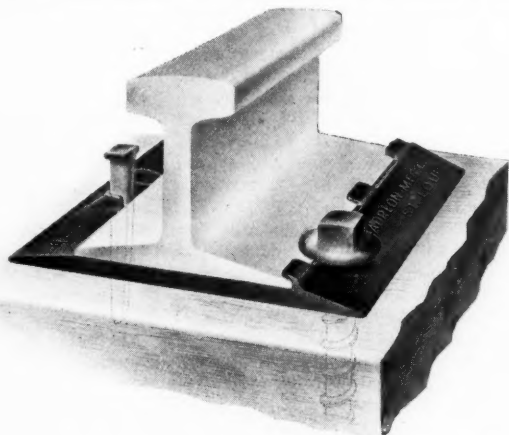
manner in which the cars are loaded. If they are loaded slightly heavier on the side on which they are to be dumped, they frequently dump automatically when released.

Clarke Tension Set Tie Plate.

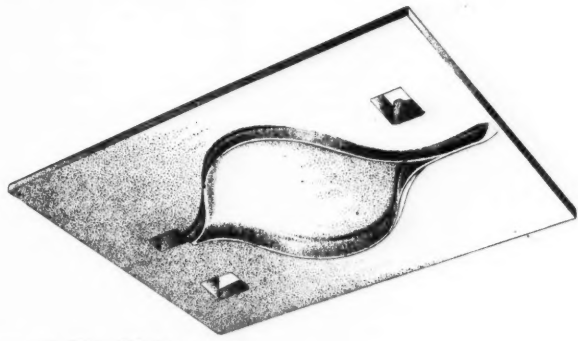
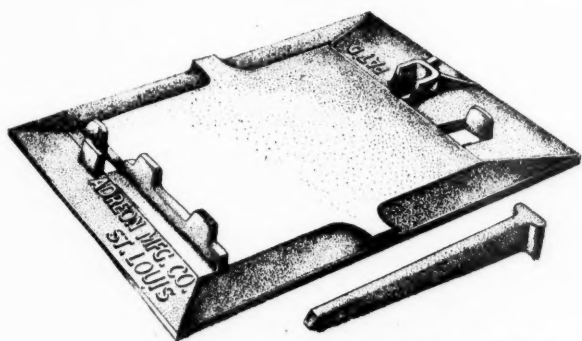
The accompanying illustrations of the Clarke tension set tie plate, sold by the Adreon Manufacturing Company, St. Louis and Chicago, show improved designs for both square and screw spike

vents the plate from skewing on the tie. The backing for the spikes prevents the heads from bending up and away from the rail. The projecting lugs can be bent over the base of the rail or, if left standing, are equivalent to a $\frac{3}{4}$ -in. shoulder.

As the mechanical abuse to which tie plates are subjected, due to lost motion between the rail and the plate, is eliminated, a $\frac{3}{8}$ -in. plate of this design will not break or bend. This design is said to eliminate worn spikes or shoulders on the Clarke plate.



Applications of Clarke Tension Set Tie Plate.



Top and Bottom Views of Tie Plate.

installations. Considerable interest has been directed to the locking of the tie plate to the base of the rail. Actual service is said to have demonstrated that the tapered wedge, driven down firmly by an ordinary spike maul, puts the plate under heavy tension and that the wedge will not work loose. The plate thus

After the plate is properly set and the wedge driven it should remain exactly as set so far as gage and spacing of ties is concerned.

These plates in malleable iron and steel are now in use on upwards of 15 prominent railways.

ANNUAL REPORTS.

THE CHESAPEAKE AND OHIO RAILWAY CO.—THIRTY-SECOND ANNUAL REPORT.

RICHMOND, VA., September 15, 1910.

TO THE STOCKHOLDERS:

The Thirty-second Annual Report of the Board of Directors, for the fiscal year ended June 30, 1910, is herewith submitted.

The average Main Track Mileage operated during the year was 1,936.9 miles, being an increase over the average mileage operated during the preceding year of 40.3 miles. The Main Track Mileage operated at the end of the year was 1,938.8 miles, an increase as compared with June 30, 1909, of 35.9 miles.

RESULTS FOR THE YEAR.

Operating Revenues were.....	\$31,237,169.30
(Increase \$4,606,451.52 or 17.29%.)	
Operating Expenses were.....	18,936,699.02
(Increase \$2,569,861.07 or 15.70%.)	
Net Operating Revenues were.....	12,300,470.28
(Increase \$2,036,590.45 or 19.84%.)	
Taxes were	873,744.12
(Increase \$72,144.12 or 9.00%.)	
Operating Income, Taxes deducted, was.....	\$11,426,726.16
(Increase \$1,964,446.33 or 20.76%.)	
Miscellaneous Income was.....	1,161,365.22
(Increase \$452,501.88 or 63.83%.)	
	\$12,588,091.38
Rentals and Other Payments were.....	727,453.98
(Decrease \$530.33 or 0.07%.)	
Income for the year available for interest was.....	\$11,860,637.40
(Increase \$2,417,478.54 or 25.60%.)	
Interest (46.96% of amount available) amounted to.....	5,570,151.10
(Increase \$139,119.41 or 2.56%.)	
Net Income for the year, equivalent to 10.02% on capital stock outstanding, amounted to.....	6,290,486.30
(Increase \$2,278,359.13 or 56.78%.)	
Dividends paid during the year: Three dividends of 1% each, and one dividend of 1½%, aggregating	2,668,617.50
(Increase \$1,412,803.50, or 112.5%.)	
Balance devoted to improvement of physical or other assets....	3,621,868.80

ACQUISITIONS DURING THE YEAR.

In pursuance of authority given by the stockholders at the last annual meeting, held in Richmond, Virginia, October 19, 1909, your Company has acquired the properties of the following companies, whose stock it had previously owned: Coal River Railway Company, owning 69.3 miles of road; Raleigh and Southwestern Railway Company, owning 20.1 miles. The properties named having thus been made integral parts of The Chesapeake and Ohio Railway, their funded debt is now listed in the balance sheet as funded debt of your Company instead of being shown, as heretofore, below the balance sheet as bonds guaranteed by The Chesapeake and Ohio Railway Company. During the year, 5.8 miles were added to the Coal River line, and an extension of 0.7 mile of the Paint Creek branch was completed. Further extensions of 11.4 miles of the Coal River Railway and 14.1 miles of the Raleigh and Southwestern Railway are in progress; also an extension of the Guyandot Valley branch of 21.4 miles. These extensions are for the purpose of further development of timber and coal tonnage, and should be completed and in operation during the fiscal year 1911.

Other acquisitions mark a most important epoch in your Company's history, namely: 63,478 shares of stock of The Hocking Valley Railway Company and 40,271 shares of stock of The Kanawha and Michigan Railway Company; and payments amounting to \$3,919,196.92 were made on account of cost of the Chicago Line hereinafter referred to. Your Company owned at the beginning of the fiscal year 11,540 shares of common stock of The Hocking Valley Railway Company, so that its ownership of stock of that company at the end of the year was 75,018 shares. At the time of the purchase referred to, The Hocking Valley Railway Company had outstanding 110,000 shares of common stock and 150,000 shares of preferred stock, but that company, having received a large amount of cash on account of the sale of its interest in certain other lines, applied it to the retirement of its preferred stock. This retirement was at first enjoined on the petition of three stockholders holding in the aggregate only 155 shares of preferred stock, which appears to have been acquired by them a few months before the determination was made to retire the preferred stock, and only 90 shares of common stock apparently acquired after the retirement had commenced. The proceedings for the retirement were afterward decreed by the United States Circuit Court to be valid and lawful in every respect, the injunction was dissolved, and your Company therefore owned on June 30, 1910, 75,018 shares of capital stock of The Hocking Valley Railway Company out of a total of 110,000 outstanding.

The total number of shares of The Kanawha and Michigan Railway Company capital stock outstanding is 90,000, of which, as above indicated, your Company owned on June 30, 1910, 40,271 shares. A similar amount is owned by the Lake Shore and Michigan Southern Railway Company.

For exhibit of results of operation, financial condition, etc., of The Hocking Valley Railway Company and of The Kanawha and Michigan Railway Company, reference is made to the annual reports of those companies.

For payments on account of cost of the Chicago Line above mentioned, together with payments made since the close of the fiscal year (all payments to date aggregating \$8,220,664.03), on account of which your Company has received and now holds in its treasury as free assets securities of The Chesapeake and Ohio Railway Company of Indiana, a com-

pany organized on July 2, 1910, which acquired, from purchasers at foreclosure sale, on July 5, 1910, the road formerly owned by the Chicago, Cincinnati and Louisville Railroad Company, operated by J. P. Goodrich, Receiver, since February 13, 1908. The results of operations of that line, the shortest between Cincinnati and Chicago, are included, from July 1, 1910, with those of The Chesapeake and Ohio Railway Company. As a trunk line between the Atlantic seaboard and Chicago, the Chesapeake and Ohio has taken a distinct forward step. The distance from tidewater at Newport News to Chicago via Chesapeake and Ohio Lines is 940 miles, comparing favorably with the length of lines of other systems from tidewater at New York to Chicago, ranging from 906 to 998 miles.

The number of miles operated by the three companies above mentioned is as follows:

The Hocking Valley Railway Company.....	350
The Kanawha and Michigan Railway Company.....	175.6
The Chesapeake and Ohio Railway Company of Indiana....	284.6

Your Board considers this a conservative and much needed expansion of your Company's interests, amply warranted by the extraordinary growth during the past twenty years, as exhibited in the preceding section of this report, and has great satisfaction in the added belief that the Chesapeake and Ohio will become more useful and prosperous, not only in building up and fostering commerce between the States, but also locally within the States of Ohio, Indiana and Illinois, respectively, as well as within the States which it has heretofore served. In this connection reference is made to the new map accompanying this report [elsewhere in the *Railway Age Gazette*] by which it will be seen that the lines referred to reach Lake Erie and Lake Michigan and the important cities of Columbus, Toledo, and Chicago, as well as many other progressive communities.

FINANCIAL.

The outstanding capital stock was reduced during the year through the conversion of \$1,100 par value of first preferred stock into common stock and General Mortgage 4½ per cent. bond.

The increases in your bonded debt shown by balance sheet of June 30, 1910, as compared with June 30, 1909, are as follows:

	Issued or Assumed During Year.	Held as Free Assets.	Held for Sale for Future Ex- penditures.
The Chesapeake & Ohio Railway Company 4½ per cent. 20-year Convertible Bonds, maturing Feb. 1, 1930....	\$31,390,000	.....	.....
Coal River Railway Company First Mortgage 4 per cent. Bonds, maturing June 1, 1945 (see preceding section)	2,450,000	\$45,000	\$155,000
Raleigh & Southwestern Railway Company First Mortgage 4 per cent. Bonds, maturing July 1, 1936 (see preceding section)	750,000	286,000	214,000
The Chesapeake & Ohio Railway Company 4½ per cent. General Mortgage Bonds, maturing March 1, 1992, issued for expenditures for double track (\$741,000), and in exchange for preferred stock (\$1,000).....	742,000	741,000	.....
The Chesapeake & Ohio Railway Company, Paint Creek Branch, First Mortgage, 4 per cent. Bonds, maturing Feb. 1, 1945	14,000	14,000	.....

Through the operation of sinking funds, \$19,000 Greenbrier Railway Company First Mortgage 4 per cent. Bonds and \$52,000 Big Sandy Railway Company First Mortgage 4 per cent. Bonds were retired during the year.

The convertible bonds above mentioned were sold to bankers on May 2, 1910, subject to subscriptions made by stockholders pursuant to an offer made under date of March 25, 1910. This issue of bonds was approved at a special meeting of the stockholders held in Richmond, Virginia, April 28, 1910, at which the issuance of not exceeding \$37,200,000 of said convertible bonds and (to provide for their conversion at par on or after May 1, 1911), an increase in your Company's common capital stock from \$63,260,300 to \$100,000,000 were respectively authorized.

The balance sheet makes a full exhibit of your Company's condition as of June 30, 1910, and it will be observed that your Company had at that time:

Working assets	\$12,207,966.54
Material and supplies	2,473,653.60
Unpledged stocks and bonds worth..	21,825,625.90
Payments on account of cost of Chicago Line (on account of which securities of The Chesapeake & Ohio Railway Company of Indiana were afterward received)....	3,919,196.92
Deferred or accrued assets.....	534,672.93
	\$40,961,115.89

Against which there were:

Working liabilities	\$7,678,055.08
Deferred or accrued liabilities	2,328,833.59
	\$10,006,888.67

From an analysis of the property accounts it will be seen that improvements and betterments were made to the amount of \$3,472,726.44, and added to cost of road, and the \$1,950,076.99 was added to the equipment account during the year.

GENERAL REMARKS.

The equipment in service on June 30, 1910, consisted of:

Locomotives owned.....	486	Increase	27
Locomotives leased under Equipment Trusts.....	213	No change	
Total	699	Increase	27
Passenger Train Cars owned.....	306	No change	
Freight Train and Miscellaneous Cars owned.....	18,265	Increase	272
Freight Train Cars leased under Equipment Trusts....	20,195	Increase	2,990

Twelve locomotives were retired and thirty-nine added to the equipment. 1,353 freight train and miscellaneous cars were retired, and 4,615 added to the equipment, the latter all of fifty-ton capacity. Operating

expenses were charged with the book value of the equipment retired (less salvage), amounting to \$444,449.24, as also with the sum of \$584,968.08, representing depreciation during the year. The latter sum, together with the amount to the credit of the fund at the close of the previous year, a total of \$1,397,142.79, appears on your balance sheet as a credit to the cost of property.

The second track work, including revision of line and grade Lee Hall to Grove, 4.5 miles; Greenway to Gladstone, 5 miles, and St. Albans to Barboursville, 27.8 miles, was completed during the year. Second track Gladstone to Riverville, 4 miles, and Walker to Providence Forge, 6 miles, has been completed since the close of the year. Second track work Providence Forge to Elko, 9.2 miles; Korah to Westham, 2.7 miles, and Fort Spring to Rockland, 2.1 miles, should be completed by the end of the calendar year. In addition, second track work, aggregating 67 miles, is in progress on the Cincinnati division, the greater portion of which should be in operation at the close of the calendar year. Upon completion of the second track now under construction, your line from Newport News to Cincinnati will have two lines of tracks, with the exception of 9 miles in West Virginia and 48 miles in Kentucky, or a total of 57 miles. If the present volume of traffic continues, it will be necessary

RETROSPECT—TWO DECADES.

The last two decades, covering approximately the period since the reorganization of your Company, have witnessed such considerable achievement that it seems fitting to record in this report the following statistics indicating the growth in actual value of your property and an even greater growth in public service:

	Year ended June 30, 1910.	Year ended June 30, 1900.	Year ended June 30, 1890.	1910 compared with 1900. Increase.	1910 compared with 1890. Increase.
Average Miles Operated.....	1,936.9	1,476.2	931.0	31.2%	108.0%
Gross Operating Revenue	\$31,237,169.30	\$13,402,070.27	\$7,161,949.37	133.1%	336.2%
FREIGHT					
Coal and Coke Tonnage.....	15,540,977	4,679,397	1,464,856	232.3%	961.5%
Other Freight Tonnage	7,342,252	5,067,443	2,295,721	44.9%	219.8%
Total	22,892,229	9,746,840	3,760,577	134.8%	508.7%
Revenue Ton Miles.....	6,123,134,875	2,946,894,104	1,006,323,855	107.7%	508.4%
Freight Revenue	\$24,901,199.77	\$10,095,144.20	\$5,384,255.70	146.6%	362.5%
Revenue per ton mile—mills.....	4.07	3.43	5.35	18.6%	**23.9%
Freight Train Miles.....	8,739,022	6,044,579	4,475,114	44.5%	95.2%
Revenue per freight train mile.....	\$2.84.9	\$1.67.0	\$1.20.0	70.5%	137.4%
Revenue tonnage per train.....	701	488	225	43.6%	211.5%
Tonnage per train—Inc. Company's Material.....	733	Not kept	Not kept	.....	.....
Loaded Car Miles	200,270,768	140,598,218	79,866,972	42.4%	150.7%
Average Tonnage per loaded car.....	30.6	21.0	12.6	45.7%	142.8%
Revenue freight carried one mile per mile of road—tons.....	3,161,307	1,996,250	1,080,906	58.3%	192.4%
PASSENGER.					
Passengers Carried	4,969,612	2,536,529	1,470,642	95.9%	237.9%
Number of passengers carried one mile.....	226,715,956	135,852,014	71,560,114	66.9%	216.8%
Passenger Revenue	\$5,002,205.07	\$2,681,076.37	\$1,471,436.56	86.6%	240.0%
Total Passenger Train Revenue	\$5,813,200.44	\$3,177,662.49	\$1,669,605.78	82.9%	248.2%
Revenue per passenger per mile.....	2.206 cents	1.973 cents	2.056 cents	11.9%	7.3%
Number of Passengers carried one mile per mile of road.....	117,051	92,028	77,530	27.1%	51.0%
Passenger Train Mileage	4,276,193	2,723,228	1,925,597	57.0%	122.1%
Passenger Revenue per train mile, not including Mail and Express....	\$1.17	\$0.98	\$0.765	19.4%	52.9%
Passenger Revenue per train mile, including Mail and Express.....	\$1.36	\$1.16	\$0.868	17.2%	56.6%
EQUIPMENT.					
LOCOMOTIVES.					
Number of Passenger and Switching Locomotives.....	161	102	59	57.9%	172.9%
Tractive Power—pounds	4,135,874	1,703,266	445,778	142.7%	828.0%
Average Tractive Power—pounds.....	25,688	16,698	7,556	53.7%	240.0%
Number of Freight Locomotives.....	538	274	178	96.4%	202.2%
Tractive power—pounds	18,597,274	7,452,800	3,767,370	149.5%	393.7%
Average Tractive Power—pounds.....	34,567	27,200	21,165	27.1%	68.4%
PASSENGER TRAIN CARS.					
Number of Cars	306	221	144	38.5%	112.5%
Seating capacity	11,793	7,541	4,641	56.4%	154.2%
REVENUE FREIGHT TRAIN CARS.					
Number of Cars	37,453	16,622	9,572	125.3%	291.3%
Tonnage Capacity:					
Box	250,598	222,394	93,740	12.7%	167.5%
Stock	12,425	9,495	7,040	30.8%	76.5%
Flats	37,940	14,287	19,430	165.5%	95.3%
Coke	16,535	3,020	2,305	447.5%	617.3%
F. B. Gondolas.....	670,980	77,005	22,780	771.3%	2845.4%
H. B. Gondolas.....	636,967	155,424	68,994	309.8%	823.2%
Total tonnage capacity.....	1,625,445	481,625	214,289	237.5%	658.5%
Average Capacity—Tons	43.4	29.0	22.4	49.7%	93.8%

**Decrease.

The net income for twenty years after deducting operating and interest charges amounted to.....	\$35,234,044.25
Amount paid in dividends during same period (26.92% of net income).....	9,485,116.50
Remainder devoted to improvement of physical or other assets.....	\$25,748,927.75

to double track the remaining 48 miles in Kentucky during the ensuing calendar year.

The coal and coke tonnage was 15,549,977, an increase of 21.5 per cent.; other freight tonnage was 7,342,252, an increase of 28.5 per cent. The total tonnage was 22,892,229 tons, an increase of 23.7 per cent. Freight train mileage was 8,739,922 miles, an increase of 15.8 per cent. Freight revenue was \$24,901,199.77, an increase of \$4,015,688.56 or 19.2 per cent. The revenue ton miles were 6,123,134,875, an increase of 20.2 per cent. The ton mile revenue was 4.07 mills, a decrease of 0.7 per cent. Revenue per freight train mile was \$2.84.9, an increase of 3.0 per cent. The revenue tonnage per train mile was 701 tons, an increase of 26 tons, or 3.9 per cent.; including Company's freight the tonnage per train was 733 tons, an increase of 3.7 per cent. The average tonnage per loaded car was 30.6 tons, an increase of 3.0 per cent. The number of tons revenue freight carried one mile per mile of road was 3,161,307, an increase of 17.7 per cent.

There were 4,969,612 passengers carried, a decrease of 2.5 per cent. The number carried one mile was 226,715,956, an increase of 4.1 per cent. Passenger revenue was \$5,002,205.07, an increase of 11.6 per cent. Total passenger train revenue was \$5,813,200.44, an increase of \$535,168.41, or 9.8 per cent. Revenue per passenger per mile was 2.206 cents, an increase of 7.0 per cent. Number of passengers carried one mile per mile of road was 117,051, an increase of 2.0 per cent. Passenger train mileage was 4,276,193, an increase of 12.0 per cent. Passenger revenue per train mile was \$1.17, a decrease of 0.3 per cent.; including mail and express it was \$1.36, a decrease of 1.7 per cent.

There were 12,412 tons of 100-lb., 7,254 tons of 90-lb., and 3,963 tons of 85-lb. steel rails used in renewals, a total of 23,629 tons, or 158.8 miles of track. There were on June 30, 1910, 686.9 miles of main track laid with rails weighing 100 lbs. per yard, 93.1 miles with 90-lb., 477.4 miles with 85-lb., 608.6 miles with 80-lb., 75-lb. and 70-lb., and 213.1 miles with

rails of lighter weight, a total of 2,079.1 miles of main track, including branch lines.

There were 951,881 ties used in maintaining existing tracks, and 277,290 in new construction, a total of 1,229,171. There were 838,959 yards of ballast used (principally stone), of which 276,873 yards were used in construction work.

Repairs were made to 813 locomotives, 287 passenger train cars and 108,015 freight train cars. The average amount expended per locomotive operated was \$2,338.78; per passenger car operated, \$792.54; per freight car operated, \$67.86. The average capacity of freight cars operated is 43.4 tons, and the average tractive power of freight locomotives 34,567 pounds.

On October 19, 1909, Mr. Theodore P. Shonts was elected a Director in your Company vice Mr. John W. Castles, deceased.

On June 5, 1910, your Company sustained a serious loss in the death of Mr. Charles E. Doyle, Vice-President in charge of operation. The Board of Directors, by suitably entry upon its minutes, promptly recorded its high appreciation of his character and service.

On May 1, Mr. E. W. Grice, the General Superintendent of the West Virginia General Division, was appointed General Manager; Mr. E. P. Goodwin was transferred from the Kentucky General Division to the West Virginia General Division as General Superintendent; Mr. J. P. Stevens was promoted to the General Superintendency of the Kentucky General Division, and Mr. T. J. Connors appointed Superintendent of the Cincinnati Division.

Acknowledgments are made with pleasure to officers and employees for faithful and efficient service during the year
By order of the Board of Directors

FRANK TRUMBULL,
Chairman.

GEO. W. STEVENS,
President.

THE FIFTY-FIRST ANNUAL REPORT OF THE CHICAGO AND NORTH WESTERN RAILWAY CO. FISCAL YEAR ENDING JUNE 30, 1910.

The results of the operations of the Chicago & North Western Railway Company for the fiscal year ending June 30, 1910, were as follows:

Average number of miles operated, 7,629.45.	
Operating revenues—	
Freight revenue	\$49,536,839.18
Passenger revenue	18,431,017.47
Other transportation revenue	5,768,344.63
Non-transportation revenue	439,483.41
Total operating revenue	\$74,175,684.69
Operating expenses (70.31 per cent. of operating revenues)	52,153,619.21
Net operating revenue	\$22,022,065.48
Outside operations—net deficit	56,941.00
Total net revenue	\$21,965,124.48
Taxes accrued (4.02 per cent. of operating revenues)	2,979,512.52
Operating income	\$18,985,611.96
Other income—	
Rents—credits	\$84,180.43
Dividends on stocks owned	1,594,249.50
Interest on funded debt owned	1,900.00
Interest on other securities, loans and accounts	808,309.23
Miscellaneous income	51,120.29
Total other income	2,539,759.45
Gross income	\$21,525,371.41
Deductions from gross income—	
Rents—debts	\$1,397,277.94
Interest accrued on funded debt	7,582,514.99
Other interest	931.89
Sinking funds	225,500.00
Other deductions	20,649.23
Total deductions from gross income	9,226,874.05
Net income	\$12,298,497.36
Dividends (8 per cent. on preferred and 7 per cent. on common stock)	*9,832,038.00
Balance income for the year	\$2,366,459.36
*This amount includes one-half year's dividend on the increase in common stock of the company issued during the current year.	
The results as compared with the preceding fiscal year were as follows:	
Freight revenue increased	\$5,917,747.91
Passenger revenue increased	1,555,349.04
Other transportation revenue increased	621,723.14
Non-transportation revenue increased	102,393.57
Increase in total operating revenues	\$8,197,213.66
Operating expenses increased	\$8,962,379.80
Taxes accrued increased	264,880.73
Increase in operating expenses and taxes accrued	\$9,227,260.53
Net deficit from outside operations increased	41,034.46
	9,268,294.99
Decrease in operating income	\$1,071,081.33

The operating expenses for the current fiscal year include \$30,150,911.21 paid for labor as compared with \$24,808,750.37 paid during the preceding fiscal year, being an increase of \$5,342,160.84 paid on account of labor. Of this increase \$738,750.67 was due to increases in the rates of compensation, and \$4,603,410.17 to the increase in the number of employees.

The taxes paid during the current fiscal year increased \$264,880.73 as compared with the preceding fiscal year, of which \$123,027.87 was due to the amount paid on account of the United States Government excise tax.

MILES OF RAILROAD.

The total number of miles of railroad owned June 30, 1910, was	7,506.47 miles
In addition to which the company operated—	
Through ownership of entire capital stock—	
Princeton & Western Railway (Wyeville to Ne-	
cedah, Wis.)	16.06 miles
Wolf River Valley Railway (Junction east of	
Elton to Van Ostrand, Wis.)	1.98 "
	18.04 "
Under lease—	
St. Paul Eastern Grand Trunk Railway (Clin-	
tonville to Oconto, Wis., and branches)	60.02 "
De Pue, Ladd & Eastern Railroad (Ladd to	
Seatonville, Ill.)	3.25 "
	63.27 "
Under trackage rights—	
Peoria & Pekin Union Railway (in the city of	
Peoria, Ill.)	2.02 "
Chicago, Indiana & South'n Railroad (Churchill	
to Ladd, Ill.)	2.80 "
Union Pacific Railroad (Broadway Station,	
Council Bluffs, Ia., to South Omaha, Neb.)	8.73 "
Chicago, St. Paul, Minneapolis & Omaha Rail-	
way (Blair to Omaha, Neb.)	24.70 "
Missouri Valley & Blair Railway & Bridge	
Company's track	3.36 "
	41.61 "
Total miles of railroad operated June 30, 1910	7,629.39 "
The above mileage is located as follows:	
In Illinois	685.02 miles
In Wisconsin	1,968.73 "
In Michigan	519.88 "
In Iowa	1,579.71 "
In Minnesota	650.30 "
In South Dakota	978.96 "
In North Dakota	14.28 "
In Nebraska	1,102.05 "
In Wyoming	130.46 "
Total	7,629.39 "

FREIGHT TRAFFIC.

The details of freight traffic for the year ending June 30, 1910, compared with the preceding year, were as follows:

	1909.	1910.	Increase— Amount Per cent.
Freight revenue	\$43,619,091.27	\$49,536,839.18	\$5,917,747.91 13.57
			Percentage of Increase or Decrease.
	1909.	1910.	
Tons of freight carried	32,793,418	39,339,739	19.96 Inc.
Tons of freight carried one mile	4,863,589,654	5,562,587,719	14.37 Inc.
Average revenue received per ton	\$1.33	\$1.26	5.26 Dec.
Average revenue received per ton			
per mile .....	.90 of a cent	.89 of a cent.	1.11 Dec.
Average distance each ton was hauled	148.31 miles	141.40 miles	4.66 Dec.
Mileage of revenue freight and			
mixed trains	18,696,827	21,336,510	14.12 Inc.
Average number of tons of revenue			
freight carried per train mile	260.13	260.71	.22 Inc.
Average number of tons of revenue			
freight carried per loaded car mile	14.60	15.51	6.23 Inc.
Average freight revenue per train			
mile	\$2.33	\$2.32	.43 Dec.

PASSENGER TRAFFIC.

The details of passenger traffic for the year ending June 30, 1910, compared with the preceding year, were as follows:

	1909.	1910.	Amount.	Per cent.
Passenger revenue.....	\$16,875,668.43	\$18,431,017.47	\$1,555,349.04	9.22
			Percentage	
Passengers carried	26,951,319	28,697,470	6.48	Inc.
Passengers carried one mile.....	932,232,161	1,012,742,855	8.64	Inc.
Average fare paid per passenger....	63 cents	64 cents	1.59	Inc.
Average rate paid per passenger per mile	1.81 cents	1.82 cents	.55	Inc.
Av. distance traveled per passenger..	34.59 miles	35.29 miles	2.02	Inc.
Mileage of revenue passenger and mixed trains	18,498,671	20,015,474	8.20	Inc.
Average passenger train revenue per train mile	\$1.14	\$1.15	.88	Inc.

MAINTENANCE OF WAY AND STRUCTURES.

The total operating expenses of the company for the year ending June 30, 1910, were \$52,153,619.21; of this amount \$10,774,337.89 was for charges pertaining to the maintenance of way and structures. Included in these charges is a large part of the cost of 40,982 tons of steel rails, the greater portion of which was laid in replacement of rails of lighter weight in 518.97 miles of track; also the cost of 2,418,782 new ties.

The charges for maintenance of way and structures also include a large portion of the cost of ballasting 26.68 miles of track with crushed stone, 356.42 miles with gravel, and 76.16 miles with cinders and slag; the erection, in place of wooden structures, of 91 new steel bridges on masonry, and 6 on pile supports, aggregating 7,570 feet in length and containing 6,456 tons of bridge metal; and the replacement of other wooden structures with masonry arch and box culverts and cast-iron pipes, the openings being filled with earth. The wooden structures replaced by permanent work aggregate 15,880 feet in length.

The charges on account of maintenance of way and structures for the year ending June 30, 1910, compared with the preceding year, were as follows:

	1909.	1910.	Inc. or Dec.
Rails Laid in Renewals.....	21,735 tons	22,646 tons	911 tons Inc.
Usable rails laid	18,000 tons	18,336 tons	336 tons Inc.
Total tons laid.....	39,735 tons	40,982 tons	1,247 tons Inc.
Ties Laid in Renewals.....	2,314,949	2,418,782	103,833 Inc.
Cost of Rails.....	\$616,709.10	\$654,641.58	\$37,932.48 Inc.
Usable rails	435,690.67	445,169.75	9,479.08 Inc.
	\$1,052,399.77	\$1,099,811.33	\$47,411.56 Inc.
Less value of old rails and other items	716,150.91	822,109.52	105,958.61 Inc.
Net charge for rails.....	\$336,248.86	\$277,701.81	\$58,547.05 Dec.
Cost of ties.....	\$1,324,617.07	\$1,240,473.53	\$84,143.54 Dec.
Cost of ballast.....	115,894.81	448,816.05	332,921.24 Inc.
Cost of other track material	299,078.02	534,982.85	235,904.83 Inc.
Roadway and track labor and other expenses.....	3,586,929.30	5,035,626.69	1,448,697.39 Inc.
Total charges for roadway and track.....	\$5,662,768.06	\$7,537,600.93	\$1,874,832.87 Inc.
Other charges account maintenance of way and structures were as follows:			
Bridges, trestles and culverts	990,094.47	1,096,140.27	106,045.80 Inc.
Road crossings, fences, etc.	248,587.27	244,272.71	4,314.56 Dec.
Signals and interlocking plants	155,602.05	250,727.87	95,125.82 Inc.
Buildings, fixtures and grounds	708,235.05	953,297.12	245,062.07 Inc.
Docks and wharves.....	91,300.47	60,626.64	30,673.83 Dec.
Superintendence	364,363.63	396,458.59	32,094.96 Inc.
Roadway tools and supplies	76,188.60	96,263.32	20,074.72 Inc.
Sundry miscellaneous charges	125,125.68	138,950.44	13,824.76 Inc.
Total charges account maintenance of way and structures	\$8,422,265.28	\$10,774,337.89	\$2,352,072.61 Inc.

The above charges for maintenance of way and structures for the current year amount to 20.66 per cent. of the total operating expenses as compared with 19.50 per cent. for the preceding fiscal year.

MAINTENANCE OF EQUIPMENT.

The charges on account of maintenance of equipment for the year ending June 30, 1910, compared with the preceding year, were as follows:

	1909.	1910.	Increase or Dec.
Locomotives	\$3,121,699.26	\$3,842,292.79	\$720,593.53 Inc.
Passenger-train cars	702,134.68	926,679.91	224,545.23 Inc.
Freight-train cars	3,519,113.05	3,676,262.75	157,149.70 Inc.
Work equipment	115,293.01	252,672.05	137,379.04 Inc.
Shop machinery and tools.....	139,446.32	173,216.59	33,770.27 Inc.
Superintendence	202,844.13	224,606.35	21,762.22 Inc.
Sundry miscellaneous charges.....	45,438.10	53,486.26	8,048.16 Inc.

Total charges account maintenance of equipment.....\$7,845,968.55 \$9,149,216.70 \$1,303,248.15 Inc.

The above charges for maintenance of equipment for the current year amount to 17.54 per cent. of the total operating expenses, as compared with 18.17 per cent. for the preceding fiscal year.

EQUIPMENT REPLACEMENT ACCOUNTS.

At the close of the preceding fiscal year there was a balance to the credit of the equipment replacement accounts of.....\$1,719.64

During the year ending June 30, 1910, there was credited to the equipment replacement accounts on account of charges to operating expenses and profit and loss, and for salvage... 2,378,722.93

\$2,380,442.57

And there has been charged during the year against the above amount the original cost of equipment retired and other items, as follows:

14 locomotives	\$94,418.00
8 passenger-train cars	33,845.00
1,256 freight-train cars.....	823,454.89
82 work cars	17,950.00
Other items	12,072.67

981,740.56

Leaving a balance to the credit of the equipment replacement accounts on June 30, 1910, of.....\$1,398,702.01

TRANSPORTATION EXPENSES.

The transportation expenses of the company for the year ending June 30, 1910, were \$29,677,354.25, or 56.90 per cent. of the total operating expenses. Of this amount \$18,262,631.80, or 61.54 per cent. was paid for labor; \$7,699,752.81, or 25.94 per cent. was paid for fuel for locomotives and \$3,714,969.64, or 12.52 per cent. was paid for supplies and miscellaneous items. The increase in the transportation expenses for the year ending June 30, 1910, as compared with the preceding fiscal year was \$5,010,491.70, or 20.31 per cent., distributed as follows:

Increase in amount paid for labor.....	\$2,884,666.76	11.69%
Increase in amount paid for fuel for locomotives..	1,694,123.25	6.87%
Increase in amount paid for supplies and miscellaneous items	431,701.69	1.75%

Total\$5,010,491.70 20.31%

The cost of locomotive fuel was materially increased by the severe weather conditions of the past winter, resulting in transportation irregularities which prevented the delivery to this company, at the usual receiving points, of an adequate and reliable supply of fuel from its coal fields in southern Illinois, and also made necessary the purchase of a considerable tonnage in the open market. The prolonged suspension of mining operations in the bituminous coal fields of Illinois and Iowa, during the latter part of the fiscal year, was another important factor entering into the increased cost of fuel.

CAPITAL STOCK.

For the purpose of obtaining funds for constructing, improving and equipping the railway, and in pursuance of the authority heretofore conferred by the stockholders and voting bondholders of the company, the board of directors authorized during the year an additional issue of common stock and scrip, as follows:

To stockholders of record on Jan. 10, 1910, an amount equal to 25 per cent. of their respective holdings.....\$30,502,800.00

All of the above common stock and scrip has been issued and is held by the public.

In addition to the above change in the common stock and scrip, there has been a decrease of \$150 in the amount of such stock and scrip held by the public, and a corresponding increase in the amount of such stock and scrip owned by the company. Thus, there is for the year a net increase of \$30,502,650 in the amount of common stock and scrip held by the public and an increase of \$150 in the amount of common stock and scrip owned by the company.

There was no change in the preferred stock or scrip.

The company's authorized capital stock is two hundred million dollars (\$200,000,000), of which the following has been issued to June 30, 1910:

Common stock and scrip held by the public..\$130,121,488.82

Common stock and scrip owned by the company 2,334,042.15

Total common stock and scrip.....\$132,455,530.97

Preferred stock and scrip held by the public\$22,395,120.00

Preferred stock and scrip owned by the company 3,834.56

Total preferred stock and scrip..... 22,398,954.56

Total capital stock and scrip, June 30, 1910.....\$154,854,485.53

FUNDED DEBT.

No bonds were sold during the year ending June 30, 1910. The amount of bonds held by the public and in sinking funds was decreased \$7,696,000 during the year, as follows:

MATURED BONDS REDEEMED:

M. L. S. & W. Ry. 20-years convertible debentures of 1907, 5 per cent.....	\$142,000
Cedar Rapids & Missouri River R. R. mortgage of 1884, 7 per cent.	28,000
C. & N. W. Ry. 25-years debentures of 1909, 5 per cent.	5,890,000
Northern Illinois Ry. first mortgage, 5 per cent.....	1,500,000
	\$7,560,000

BONDS REDEEMED WITH SINKING FUND PAYMENTS:

C. & N. W. Ry. Sinking fund of 1879, 6 per cent...\$	57,000
C. & N. W. Ry. Sinking fund of 1879, 5 per cent...	79,000
	136,000
Total bonds redeemed.....	\$7,696,000

BONDS IN TREASURY AND DUE FROM TRUSTEES.

At the close of the preceding fiscal year the amount of the Company's Bonds in its Treasury and due from Trustee was.\$11,281,000.00

The above amount of Bonds has been decreased by those retired during the year ending June 30, 1910, as follows:

M. L. S. & W. Ry. 20-Years Convertible Debentures of 1907, 5%.....	\$3,000.00
Cedar Rapids & Missouri River R. R. Mortgage of 1884, 7%.....	741,000.00
C. & N. W. Ry. 25-Years Debenture of 1909, 5%.....	10,000.00
C. & N. W. Ry. Sinking Fund of 1879, 6%.....	57,000.00
C. & N. W. Ry. Sinking Fund of 1879, 5%.....	77,000.00
	888,000.00

\$10,393,000.00

The Bonds due from Trustee have been increased during the year as follows:

C. & N. W. Ry. General Mortgage Gold Bonds of 1987, due from Trustee in Exchange for Bonds Retired, viz.:	
M. L. S. & W. Ry. 20-Years Convertible Debentures of 1907, 5%.....	\$436,000.00
Cedar Rapids & Missouri River R. R. Mortgage of 1884, 7%.....	769,000.00
C. & N. W. Ry. 25-Years Debentures of 1909, 5%.....	5,900,000.00
Northern Illinois Ry. First Mortgage, 5%.....	1,500,000.00
C. & N. W. Ry. Sinking Fund of 1879, 6%.....	112,000.00
C. & N. W. Ry. Sinking Fund of 1879, 5%.....	153,000.00
	8,870,000.00
C. & N. W. Ry. General Mortgage Gold Bonds of 1987, due from Trustee on Account of Construction Expenditures Made During the Year.....	1,000,000.00
Total Bonds in the Treasury and due from Trustee, June 30, 1910.....	\$20,263,000.00
Net Increase during the year in Bonds in the Treasury and due from Trustee.....	\$8,982,000.00

CONSTRUCTION.

The construction charges for the year ending June 30, 1910, were as follows:

On Account of Additional Main Tracks, viz.:	
Third Track, Mayfair Cut-Off, Ill.....	2.52
Second Track, West Chicago to Wayne, Ill.....	4.74
Third and Fourth Tracks, Fulton Cut-Off, Illinois.....	4.69
	\$407,751.65
On Account of Elevating Tracks, viz.:	
in the City of Evanston, Ill.....	\$767,001.31
North 46th Avenue to Austin Avenue, Chicago, Ill.....	86,424.69
Austin Avenue to Harlem Avenue, Oak Park, Ill.....	182,237.28
South Branch Track, from near Taylor Street to Canal St., Chicago, Ill.....	215,842.39
In the City of Milwaukee, Wis. (Madison Division).....	380,584.31
	1,632,089.98
Sundry Construction:	
Right of Way and Additional Depot and Yard Grounds.....	\$347,668.04
Buildings, Furniture and Fixtures.....	915,515.17
Dock and Wharf Property.....	1,125,440.89
Shop Machinery and Tools.....	40,064.97
Permanent Bridges (cost of new over old).....	1,471,586.94
Interlocking and Signal Apparatus.....	24,163.30
New Sidings, Yard Tracks and Spurs to Industries (60.57 miles).....	310,641.34
Betterment of Roadway and Track.....	503,951.12
Fulton Terminal Improvements.....	154,177.76
Thatcher-Valentine Revision, Nebraska.....	407,297.53
Hawarden Revision, Iowa.....	42,105.13
Account New Chicago Passenger Terminal.....	16,939,515.48*
Miscellaneous Construction, including Road Crossings, Signs and other items.....	121,046.01
	22,408,173.68
Additional Equipment:	
81 Locomotives, 5 Dining Cars, 48 Coaches, 8 Combined Mail and Baggage Cars, 10 Baggage Cars, 1,500 Automobile Cars, 2,000 Gondola Cars, 300 Flat Cars, 950 Ore Cars, 500 Box Cars, 250 Refrigerator Cars, 300 Stock Cars, 60 Caboose Cars, 3 Pile Drivers, 1 Track Scale Test Car.....	\$7,068,836.51
Less Equipment retired.....	1,117,428.89
	5,951,407.62
Total.....	\$30,394,422.93

*NOTE.—This item includes \$11,032,991.80 expended in previous years and carried in the account "Real Estate in Suspense and Advances on account of the New Chicago Passenger Terminal," which was transferred to Construction Account in the current year.

NEW PASSENGER TERMINAL IN THE CITY OF CHICAGO.

Substantial progress has been made during the year in the construction of the company's new passenger terminal and approaches in the city of Chicago. In the terminal section, extending from a connection with the west and north approached at Jefferson street and Austin avenue to Madison street, all retaining walls, abutments, steel viaducts and sand filling are completed, the structural steel for the track floor and train shed is in place, and the track floor and train shed roof are being constructed; the enclosing walls are practically completed and the subdivision of the space beneath the track floor is well advanced. The walls, roof and interior partitions of the station building are completed and a large portion of the interior finish and decoration of this building is done. The power house, north of Lake street, is practically completed and the necessary machinery is being installed.

On the west approach, from near Ashland avenue to Jefferson street, and on the north approach from near Carpenter street to Jefferson street, all retaining walls, abutments, steel viaducts and sand filling are completed, the four main tracks are laid and ballasted, except at connections with the present main lines, and the installation of signal and interlocking apparatus is in progress.

It is expected that the new terminal will be completed and opened to the public during the present calendar year.

TRACK ELEVATION IN THE CITY OF CHICAGO AND VICINITY.

Pursuant to an ordinance adopted by the Common Council of the city of Chicago, the company has undertaken the elevation, to a maximum height of 17½ ft., of its roadway and main tracks in that city from a connection with its Rockwell street line at Taylor street to a connection with its Sixteenth street line at Leavitt street, a distance of .81 miles.

Satisfactory progress has been made during the year in the elevation of the main tracks of the company on its Milwaukee line through the city of Evanston, and it is expected that the work will be completed during the ensuing autumn. Three main tracks on this line are now elevated and in

operation from Chicago to a point north of the Davis street station in Evanston, a distance of 13 miles. In connection with this undertaking, four modern brick passenger stations have been completed in Evanston and one is under construction at North Evanston.

In the village of Oak Park, adjoining the city of Chicago at its western limits, the four northerly tracks of the proposed six-track system have been elevated from Austin avenue to Clinton avenue, a distance of 1.22 miles; the bridge work has been erected for the subways and the street improvements are substantially completed. The improvement of the Harlem avenue freight yard, including the construction of a brick freight house, has also been completed.

TRACK ELEVATION IN THE CITY OF MILWAUKEE.

The elevation of the main track of the company on its Madison division in the city of Milwaukee, from a point near Chicago avenue to Greenfield avenue, a distance of 1.62 miles, including the elevation of the Barclay street and Chase yards, containing 6.55 miles of track, the reconstruction of the Kinnickinnic river drawbridge and the construction of subway bridges across Kinnickinnic avenue, Becher street, Lincoln and Chicago avenues, and a brick freight station and team yard at Lincoln avenue, have been completed.

SUNDRY ADDITIONS AND BETTERMENTS.

Among the more important sundry additions and betterments to the property of the company during the fiscal year are the following:

The third track on the Mayfair cut-off from Foster street, Evanston, to Weber station, a distance of 2.52 miles, has been practically completed. The Fulton (Ill.) cut-off, consisting of third and fourth main tracks from a connection with the main line of the Galena division, about three miles east of Fulton, Ill., to the east end of the company's new bridge across the Mississippi river between East Clinton, Ill., and Clinton, Ia., a distance of 4.69 miles, has been completed.

The revision of the main line of the Nebraska and Wyoming division between Thatcher and Valentine, Neb., including the construction of a cut-off 5.73 miles in length, located south of the present main line between these points, and the construction of a bridge 1,300 ft. in length across the Niobrara river, has been completed.

A second main track has been constructed on the Galena division from (near) West Chicago to a point west of Wayne, Ill., a distance of 4.74 miles.

An aggregate of 60.57 miles of yard tracks, sidings and industrial spurs has been added.

A second main track is being constructed and the present main line is being revised between Hawarden, Ia., and the junction with the Sioux City, Dakota & North Western Railway, about two miles east of that station.

To provide for the extension and enlargement of the company's station and terminal facilities, a considerable expenditure has been made during the year for additional real estate, the more important expenditures on this account having been at Proviso, Ill., and Tracy, Minn.

Modern brick passenger stations have been completed at McHenry, Ill., Blair, Neb., and Casper, Wyo.

Near Fulton, Ill., the company has acquired 201 additional acres of land and has commenced the construction of a large terminal yard. The improvement now undertaken consists of 22 yard tracks with capacity for 1,700 cars, 4 repair tracks with capacity of 100 cars, and the following structures:

Brick engine house, 58 stalls.
Turntable, 80 ft., electrically operated.
Mechanical coaling plant, 800-ton pocket capacity.
Double clinker pit, 100 ft. long.
Water station with five stand pipes.
Brick power houses and miscellaneous buildings.
At East Elgin, Ill., a brick freight house 160 ft. x 32 ft. has been constructed.
At the Chicago shops of the company a complete plant for washing out locomotive boilers has been constructed.
At Council Bluffs, Ia., extensive additions have been made to the company's shop and engine house plant. Among the more important structures completed during the year are the following:
Brick engine house, 24 stalls.
Brick machine and boiler shop, 100 ft. x 140 ft.
Brick heater house, 25 ft. x 25 ft.
Heating plant.
Brick oil house, 32 ft. x 34 ft.
Storehouse office, 30 ft. x 124 ft.
Holman Coal Chute, 300 ton.
Turntable, 80 ft.
Cinder pit—15 panels—154 ft. long.
Clinker pit, 24 ft. long.

In connection with this improvement a system of yard, coach and repair tracks has also been constructed.

At Hawarden, Ia., a 16-stall 90-ft. engine house, an 80-ft. turntable, and a Holman mechanical coaling plant are being constructed, and the yard revised.

At LeGrand, Ia., two stone crushers of large capacity with the necessary appurtenances have been installed to provide ballast.

At Layton Park, Milwaukee, the company's storage yards have been enlarged.

At Lancaster, Wis., a 3-stall engine house has been constructed.

At South Oshkosh, Wis., an ice house 150 ft. x 250 ft., of 30,000 tons capacity has been erected.

At Huron, S. D., a complete plant for the manufacture of Pintsch gas has been installed.

At Escanaba, Mich., iron ore dock No. 5 has been rebuilt and the yards enlarged. The rebuilt dock is 2,220 ft. long and 52 ft. 2 in. wide, with an approach 1,500 ft. in length. It contains 370 ore pockets each having a capacity of 325 tons and has a total working capacity of 120,250 tons.

To facilitate the despatching of trains, a complete telephone line with twenty station offices has been constructed along the company's right of way from Long Pine to Chadron, Neb., a distance of 192 miles.

The following new equipment has been purchased during the year:

Locomotives.....	81
Passenger equipment—	
Dining cars.....	5
Coaches.....	48
Combined mail and baggage cars.....	8
Baggage cars.....	10

Freight equipment—	
Automobile cars	1,500
Gondola cars	2,000
Flat cars	300
Ore cars	950
Box cars	500
Refrigerator cars	250
Stock cars	300
Caboose cars	60
	5,860
Work equipment—	
Pile drivers	3
Track scale test car.....	1

NEW RAILWAYS.

The following proprietary railway companies have been organized in the interest of this company:

LEE COUNTY RAILWAY COMPANY.—Organized under the laws of Illinois. This company has completed a double track railway from Nachusa to Nelson, Ill., a distance of 12.76 miles, which will be operated under lease by the Chicago & North Western Railway Company after July 1, 1910, as a part of the third and fourth main track mileage of its Galena division. The new railway effects a material saving in grades and curvature as compared with the existing line between Nachusa and Nelson, and provides an important addition to the company's track facilities between Chicago and the Mississippi river.

BELLE FOURCHE VALLEY RAILWAY COMPANY.—Organized under the laws of South Dakota to construct a railway eastwardly from a connection with the Chicago & North Western Railway at Belle Fourche, S. D., through the counties of Butte and Meade for a distance of 88 miles. That portion of this railway extending from Belle Fourche to a point near the town site established in Butte county by the United States government in connection with its reclamation project, a distance of 23.52 miles, has been completed, and after July 1, 1910, will be operated under lease by the Chicago & North Western Railway Company.

JAMES RIVER VALLEY & NORTH WESTERN RAILWAY COMPANY.—Organized under the laws of South Dakota to construct a railway in that state from Gettysburg, in Potter county, to Blunt, in Hughes county, and from Onida, in Sully county, to Hitchcock in Beadle county, in all about 130 miles. The construction of this railway from Gettysburg to Blunt, a distance of 39.55 miles, is nearly completed, and substantially all of the right of way for that portion of the railway between Onida and Hitchcock has been acquired.

SIOUX CITY, DAKOTA & NORTH WESTERN RAILWAY COMPANY.—Organized under the laws of Iowa to construct a railway in that State from Sioux City to Hawarden. The construction of this railway from a connection with the Illinois Central Railroad near Hinton to a connection with the Chicago & North Western Railway near Hawarden, a distance of 28.17 miles, is well advanced. An agreement has been entered into between the Illinois Central Railroad Company and the Chicago & North Western Railway Company providing for perpetual trackage over the main line of the Illinois Central Railway Company between Sioux City and Hinton, a distance of 12.72 miles.

DES PLAINES VALLEY RAILWAY COMPANY.—Organized under the laws of Illinois. Substantially all of the right of way has been acquired for this double track railway, from a point between Northfield and Blodgett on the western division of the four-track system of the Chicago and North Western Railway between Chicago and Milwaukee to a connection with the Wisconsin Division near Des Plaines, and thence to a connection with the Galena Division at Proviso, a distance of about 21 miles.

This railway will directly connect the several divisions of the Chicago & North Western Railway entering the City of Chicago with the proposed enlarged terminal yards at Proviso and enable that company to effect important economies in the diversion and distribution of the large, and increasing, traffic now passing through the terminals within that city.

MILWAUKEE, SPARTA & NORTH WESTERN RAILWAY COMPANY.—Organized under the laws of Wisconsin to construct a railway in that State from a connection with the Chicago & North Western Railway near Lindworm on the Wisconsin Division, about eight miles north of Milwaukee, northwesterly to Sparta on the Madison Division, a distance of 169.52 miles and from a connection with the above line at a point about six miles west of Lindworm southerly to a connection with the Milwaukee and Madison Line near West Allis, a distance of 8.16 miles. From Lindworm to Clyman and from the junction west of Lindworm to near West Allis, in all about 51.78 miles, the construction of a double track railway is in progress. From Clyman to Necedah and from Wyeville to Sparta a considerable portion of the right of way has been acquired and the construction of a single track railway has been commenced. Between Necedah and Wyeville, an existing branch railway will be reconstructed and used as a part of the main line. In the construction of this railway, such provision as may be economical will be made for the future construction of an additional main track from Clyman to Sparta.

This railway will afford a direct route, with low grades, from Milwaukee to connections with the Chicago, St. Paul, Minneapolis & Omaha Railway at Wyeville and with the Madison Division of the Chicago & North Western Railway at Sparta, to which may be economically diverted a large volume of traffic now passing over the existing routes and heavy

grades via Madison and Elroy. It will also provide a double track belt line around the City of Milwaukee, which will afford great relief from congestion at the terminals within that city. All through traffic may be diverted to the belt line and a considerable portion of the local traffic distributed at its terminal yards.

LANDS.

The sale of the timber lands in the company's Wisconsin and Michigan land grants has been discontinued for the purpose of re-examination and reappraisal. The total number of acres remaining in the several grants June 30, 1910, amounted to 377,334.60 acres, of which 4,808.40 acres were under contract for sale, leaving unsold 372,526.20 acres.

Appended hereto may be found statements, accounts and statistics relating to the business of the fiscal year, and the condition of the company's affairs on June 30, 1910.

MARVIN HUGHITT, President.

COMPARATIVE STATEMENT OF INCOME ACCOUNT.

	Year Ending June 30, 1909.	Year Ending June 30, 1910.	
	Average mile- age oper- ated 7,635.49.	Average mile- age oper- ated 7,629.45.	Increase +, Decrease —.
Operating Revenues:			
Freight Revenue	\$43,619,091.27	\$49,536,839.18	+\$5,917,747.91
Passenger Revenue	16,875,668.43	18,431,017.47	+ 1,555,349.04
Other Transportation Revenue	5,146,621.49	5,768,344.63	+ 621,723.14
Non-transportation Revenue	337,089.84	439,483.41	+ 102,393.57
Total Operating Revenues	\$65,978,471.03	\$74,175,684.69	+\$8,197,213.66
Operating Expenses	43,191,239.41	52,153,619.21	+ 8,962,379.80
Net Operating Revenue	\$22,787,231.62	\$22,022,065.48	— \$765,166.14
Outside Operations:			
Net Deficit	15,906.54	56,941.00	+ 41,034.46
Total Net Revenue	\$22,771,325.08	\$21,965,124.48	— \$806,200.60
Taxes accrued	2,714,631.79	2,979,512.52	+ 264,880.73
Operating income	\$20,056,693.29	\$18,985,611.96	— \$1,071,081.33
Other Income:			
Rents—Credits	65,180.75	84,180.43	+ 18,999.68
Dividends on Stocks Owned	1,886,192.00	1,594,249.50	— 291,942.50
Interest, Funded Debt Owned	2,837.50	1,900.00	— 937.50
Interest on Other Securities,			
Loans and Accounts	549,421.42	808,309.23	+ 258,887.81
Miscellaneous Income	50,429.83	51,120.29	+ 690.46
Total Other Income	\$2,554,061.50	\$2,539,759.45	— \$14,302.05
Gross Income	\$22,610,754.79	\$21,525,371.41	— \$1,085,383.38
Deductions from Gross Income:			
Rents—Debits	\$818,848.13	\$1,397,277.94	— \$578,429.81
Int. Accrued on Funded Debt	7,603,025.00	7,582,514.99	— 20,510.01
Other Interest	900.96	931.89	+ 30.93
Sinking Funds	224,500.00	225,500.00	+ 1,000.00
Other Deductions	28,187.15	20,649.23	— 7,537.92
Total Deductions from Gross			
Income	\$8,675,461.24	\$9,226,874.05	+ \$551,412.81
Net Income	\$13,935,293.55	\$12,298,497.36	— \$1,636,796.19
Dividends on Stock	8,764,503.00	9,832,038.00	+ \$1,067,535.00
Balance Income for the year,			
carried to Profit and Loss	\$5,170,790.55	\$2,466,459.36	— \$2,704,331.19

*NOTE.—This increase is due to one-half year's dividend on the increase in Common Stock of the Company issued during the current year.

PROFIT AND LOSS ACCOUNT, JUNE 30, 1910.

Dr.		Cr.
Balance from operations of Land Properties for year ending		Balance, June 30, 1909.....
June 30, 1910.....	\$82,757.13	\$30,672,159.22
Depreciation accrued prior to July 1, 1907, on equipment re-		Balance Income for Year Ending June 30, 1910, brought for-
tired during the current fiscal year.....	709,158.55	ward from Income Account.....
Adjustments in sundry accounts due to operations of previous		2,466,459.36
years (net)	139,334.22	Balance of Accounts Written Off the Books
Net loss on property sold or abandoned and not replaced and		6,281.64
preliminary construction work abandoned.....	34,718.22	
Balance Credit, June 30, 1910, carried to Balance Sheet.....	32,178,932.10	
	\$33,144,900.22	\$33,144,900.22

GENERAL BALANCE SHEET, JUNE 30, 1910.
(7,506.47 Miles.)

ASSETS.		LIABILITIES.	
Property Investment.		Capital Stock:	
Road and Equipment:		Common Stock and Scrip, C. & N. W. Ry.	
Balance to Debit of this Account, June 30, 1909	\$260,930,188.09	Co., held by the public.....	\$130,121,488.82
Add C. & N. W. Ry. Sinking Fund Bonds of 1879 retired and credited this account in the two preceding fiscal years	273,000.00	Preferred Stock and Scrip, C. & N. W. Ry.	
Add Sundry Construction and Equipment Expenditures for the year ending June 30, 1910, as see statement elsewhere herein	30,394,422.93	Co., held by the public.....	22,395,120.00
	<u>\$291,597,611.02</u>		<u>\$152,516,608.82</u>
Securities:		Common Stock and Scrip, C. & N. W. Ry.	
Securities of Proprietary, Affiliated and Controlled Companies—Unpledged	794,760.00	Co., owned by the Company.....	\$2,334,042.15
Other Investments:		Preferred Stock and Scrip, C. & N. W. Ry.	
Advances to Proprietary, Affiliated and Controlled Companies for Construction, Equipment and Betterments.....	\$15,877,949.09	Co., owned by the Company.....	8,834.56
Miscellaneous Investments	970,507.81		<u>2,337,876.71</u>
	<u>16,848,456.90</u>	Premium Realized on Capital Stock.....	29,657.75
	<u>\$309,240,827.92</u>		<u>\$154,884,143.28</u>
Working Assets:		Mortgage, Bonded and Secured Debt:	
Cash	\$18,503,988.19	Bonds in hands of the public.....	
Common Stock and Scrip, C. & N. W. Ry. Co., in hands of Treasurer.....	2,334,042.15	Add C. & N. W. Ry. Sinking Fund Debentures of 1933, in hands of public, issued for purchase of Stock of C. St. Paul. M. & O. Ry. Co.....	
Preferred Stock and Scrip, C. & N. W. Ry. Co., in hands of Treasurer.....	3,834.56		9,695,000.00
\$40,000 M. L. S. & W. Ry. Ext. & Imp. Sinking Fund Bonds on hand.....	40,000.00		<u>\$148,206,500.00</u>
\$1,835,000 C. & N. W. Ry. 3½% General Mortgage Gold Bonds of 1987 on hand.....	1,835,000.00	Bonds held by Trustee account Sinking Funds	4,989,500.00
\$17,957,000 C. & N. W. Ry. General Mortgage Gold Bonds of 1987, due from Trustee in exchange for Bonds retired.....	17,957,000.00	Bonds owned by the Company and due from Trustee	20,263,000.00
\$431,000 Southern Iowa Ry. First Mortgage Bonds on hand.....	431,000.00		<u>173,459,000.00</u>
149,200 Shares of Capital Stock of the Chicago, St. Paul, Minneapolis & Omaha Ry. Co.	10,337,152.29	Working Liabilities:	
41,715 Shares of Preferred Stock of the Union Pacific Railroad Co.....	3,910,575.93	Traffic and Car-Service Balances Due to Other Companies	
Bills Receivable	1,685.35	Audited Vouchers and Wages Unpaid.....	
Traffic and Car-Service Balances Due from other Companies	40,721.28	Miscellaneous Accounts Payable.....	
Net Balance Due from Agents and Conductors	3,782,695.15	Matured Interest, Dividends and Rents Unpaid	
Miscellaneous Accounts Receivable.....	1,296,155.86	Matured Mortgage, Bonded and Secured Debt Unpaid	
Materials and Supplies.....	6,296,589.28	Other Working Liabilities.....	
Other Working Assets.....	3,133.26		<u>13,048,377.17</u>
	<u>66,773,573.30</u>	Accrued Liabilities Not Due:	
Deferred Debit Items:		Unmatured Interest Payable.....	
Advances	\$283,686.17	Deferred Credit Items:	
Insurance Paid in Advance.....	25,918.31	Reserve for Accrued Depreciation.....	
Cash and Securities in Sinking and Redemption Funds	6,768,593.76	Other Deferred Credit Items.....	
Other Deferred Debit Items.....	781,125.05		<u>1,570,704.85</u>
	<u>7,859,323.29</u>	Appropriated Surplus:	
	<u>\$383,873,724.51</u>	Sinking Fund on Madison Extension Gold Bonds	
		" " " Menominee Extension Gold Bonds	
		" " " North Western Union Ry. Gold Bonds	
		" " " W. & St. P. R. R. Extension Gold Bonds...	
		" " " C. & N. W. Ry. Sinking Fund Bonds of 1879...	
			<u>7,141,593.76</u>
		Profit and Loss.....	<u>32,178,932.10</u>
			<u>\$383,873,724.51</u>